(No Model.)

P. PERRET.

MANUFACTURE OF BALANCE WHEELS FOR WATCHES.

No. 433,255. Patented July 29, 1890.

Fig. 1

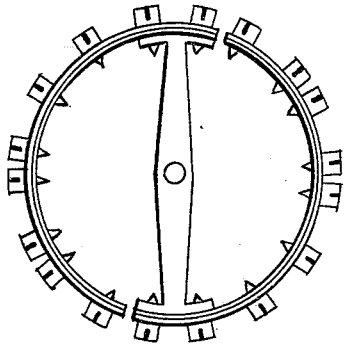
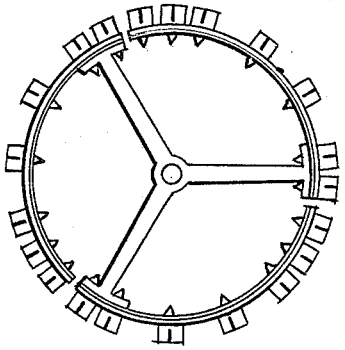


Fig. 2



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PAUL PERRET, OF CHAUX-DE-FONDS, SWITZERLAND.

MANUFACTURE OF BALANCE-WHEELS FOR WATCHES.

SPECIFICATION forming part of Letters Patent No. 433,255, dated July 29, 1890.

Application filed November 12, 1888. Serial No. 290,545. (No model.)

To all whom it may concern:

Be it known that I, PAUL PERRET, watch-manufacturer, of Chaux-de-Fonds, in Switzerland, have invented new and useful Improvements in Balance-Wheels for Watches, of which the following is a specification.

Although the construction of the balance-wheels of watches is a most important part of watch-manufacture, it has not been as much improved as has been that of the other parts of the watch. The whole mechanism of the watch is intended to transmit and to distribute intermittently the power of the main-spring with as little loss of force as possible. The purpose of the balance-wheel consists, essentially, in regulating those intermittencies. To work satisfactorily, the balance-wheel must be made so as not to be influenced either by the variation of temperatures or by magnetic influences. The influences of variations of temperature are eliminated by forming the balance-wheels of two metals, one of which has a higher co-efficient of dilatation than the other, and there have already been used non-magnetic alloys in the manufacture of balance-wheels and balance-springs for the purpose of avoiding the disturbances produced in the working of the escapement by magnetic influences; but the process of manufacturing compensated balance-wheels has not been improved till now, and the process used till now, which is very long and complicated, has likewise the disadvantage of producing a great waste of metal, which is a great disadvantage in manufacturing non-magnetic balance-wheels, because they are essentially composed of precious metals.

My invention consists in the process or method of making balance-wheels for watches; and in carrying out my invention I form a bimetallic tube and cut the same up into rings, and finish up said rings by turning and polishing and making the screw-holes. These bimetallic rings are each connected to the arms of the balance by screws, solder, or in any desired manner, and after these parts are united the rings are cut through into segments corresponding in number with the number of the arms. I prefer to divide the ring into three segments, as this insures a more accurate regulation of the watch.

My bimetallic ring is composed of an inner wall of steel, or a non-magnetic alloy having approximately the same co-efficient of expansion as steel, and an outer wall of brass or other metal more dilatable than steel. I sometimes employ a metallic alloy composed of platinum and nickel or irradiated platinum and nickel, to which may be added a small quantity of silver. These are melted together in a crucible-furnace. This alloy possesses approximately the same co-efficient of expansion as steel.

In carrying out my process I take a rectangular ingot of steel or alloy and solder to it an ingot of brass or other metal more dilatable than steel and of the same size and shape. The bimetallic ingot is now rolled and formed into a tube, the inner wall of which is of steel or non-magnetic alloy. This bimetallic tube is now cut up into bimetallic rings, which are turned and polished in a lathe and provided with the necessary screw-holes. The bimetallic tube may likewise be made by soldering a tube of brass or of similar metal over a tube of steel or of a non-magnetic alloy—such as herein specified—and having the properties of steel, which is afterward cut up into bimetallic rings. The arms of the balance-wheel are made together, but separate from the rings, and are affixed to the aforesaid rings either by means of screws or by soldering them, or in any other suitable way.

In the accompanying drawings, Figures 1 and 2 show compensated balance-wheels made according to my invention.

Having thus described my invention, I claim—

The process or method of manufacturing balance-wheels for watches or chronometers, consisting in forming a bimetallic tube, cutting up said tube into bimetallic rings, forming the ring of the balance-wheel, forming the arms for the wheel, and fixing said ring to the ends of said arms and cutting through the ring to separate it into two or three segments, according to the number of arms of the balance-wheel, substantially as described, and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PAUL PERRET.

Witnesses:
NUMA PERRET,
ALBERT FAVRE.