H. A. WIENAND.

PROCESS FOR CASTING ARTIFICIAL TEETH.

APPLICATION FILED AUG. 27, 1912.

1,082,058. Patented Dec. 23, 1913.

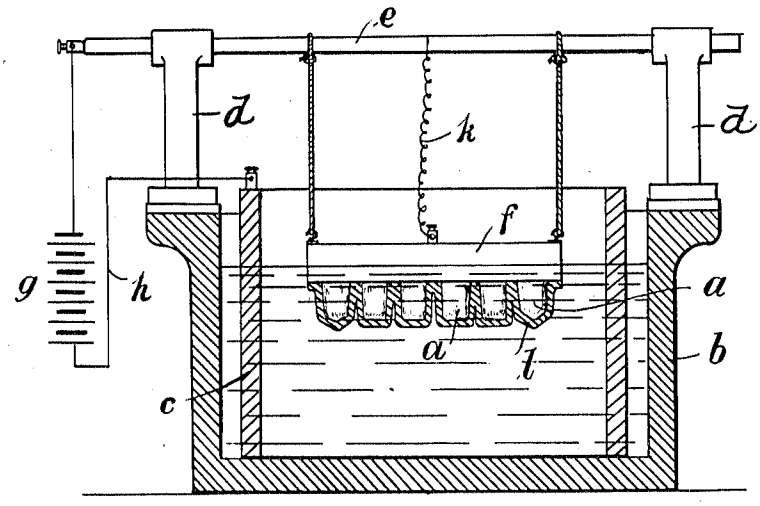


Fig. 1.

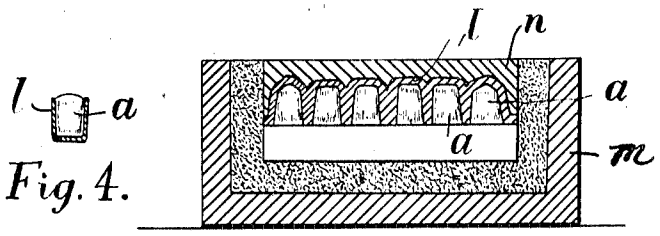


Fig. 2.

Fig. 4.

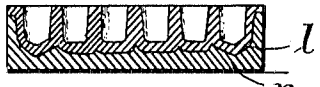


Fig. 3.

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UNITED STATES PATENT OFFICE.

HEINRICH AUGUST WIENAND, OF FRANKFORT-ON-THE-MAIN, GERMANY.

PROCESS FOR CASTING ARTIFICIAL TEETH.

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Application filed August 27, 1912. Serial No. 717,863.

To all whom it may concern:

Be it known that I, HEINRICH AUGUST WIENAND, citizen of the German Empire, residing at Frankfort-on-the-Main, Germany, have invented an Improved Process for Casting Artificial Teeth, of which the following is a specification.

This invention relates to an improved process for casting artificial teeth, which are usually made of porcelain or some similar substance, which is pressed in the plastic state into metal molds or dies. The method hitherto employed has usually been to make a sand or plaster mold of the pattern which has usually been a natural or an artificial tooth, and to cast a metal tooth therefrom or to cut out a steel pattern of the tooth. The metal tooth was then impressed on a plaster block and a female plaster or like pattern was produced therefrom. This female pattern was used to cast a metal mold of brass or the like. When steel patterns were cut, the steel has been driven or pressed into openings in a brass plate to form a mold for the artificial teeth. According to the present invention, this process is very much simplified and cheapened by employing electrolytic methods for producing the mold. By this method, I am also able to produce a number of sizes of teeth from a single original.

According to this invention, I make a metallic duplicate of the original and form a mold therefrom by electrodeposition, while I may remove the metallic duplicate from the bath at various periods to obtain larger sizes of such metallic teeth. In practice, I find that good results may be obtained by employing a composition of lead and zinc for the metallic duplicate and the metal deposited on this duplicate by electrolytic means is conveniently nickel.

In carrying out the invention in practice, the original is pressed in a sand or plaster mold and the molten composition of lead and zinc is poured into this mold. I thus obtain a metallic duplicate of the original. This duplicate is then suspended in an electrolytic bath. After a convenient period, say two hours, I may remove the duplicate which is then coated with a covering of nickel and is consequently larger. This coated duplicate I may press in a sand or like mold to obtain a second metal tooth of larger size than the original. The coated metal duplicate is then returned to the bath and the process of deposition continues. This process may be arrested at further intervals to obtain further enlarged metallic copies. The deposition is continued for several days until a substantial thickness of nickel has been deposited on the metallic duplicate. Conveniently an entire set is treated at one time. The thickly coated tooth is then removed and placed in a molding box. A suitable metal base is then run into the box and the metal duplicates are extracted. With the metals mentioned, this extraction is easily effected and there is left behind a clean clear metal mold of nickel with a backing of other suitable metal or composition as for instance, lead or lead and zinc. The plastic mass of which the artificial teeth are formed, is then pressed into the nickel lined cavities of the mold.

The invention will be more readily understood from the following description given by way of example and with reference to the accompanying illustrative drawings in which:—

Figure 1, shows the metal duplicate suspended in the electrolytic bath. Fig. 2, is a section showing the thickly coated metal teeth placed in the box with the backing in position. Fig. 3, shows the finished mold. Fig. 4, shows a tooth removed from the bath at an intermediate stage in the coating process.

In carrying the invention into effect according to one form, a metal pattern or duplicate *a*, is produced from the original. This metal duplicate is conveniently made in a mixture of lead and zinc. The metal duplicate so formed is treated in an electrolytic apparatus. This apparatus comprises a vat *b*, containing for example, a solution of double sulfate of nickel and ammonium in which is placed an annular anode of nickel *c*. Upon the upper edges of the vat are arranged the standards or like supports *d*, adapted to carry a conducting rod *e*, from which is suspended by suitable cords a carrier *f*, serving as a means whereby the metal duplicate is suspended. The nickel anode *c*, is electrically connected by the wire *h*, with the positive terminal of the battery or plating dynamo *g*, the negative terminal being electrically connected with the conducting rod *e*. The conducting rod *e*, is also electrically connected in any suitable manner for example by means of the wire *k*, with the metal duplicate. In use, the current is

switched on, whereupon, nickel is electrolytically deposited upon the surfaces of the metal duplicate. After a convenient period, say two hours, the duplicate, coated with nickel *l*, for example see Fig. 4, may be removed and pressed into sand or other material to produce a mold for obtaining a second metal tooth of larger size than the original. The coated duplicate is then returned to the bath and the process of electrodeposition permitted to continue. This process may be arrested at further intervals to obtain further enlarged metallic copies. The process of electrodeposition is continued until a substantial deposit is secured whereupon the coated duplicate is removed from the electrolytic bath and placed in a molding box *m*. A suitable metal, alloy or composition is run into the molding box and serves, on setting, as a base *n*. The metal duplicate is then extracted, leaving behind a clean clear metallic mold having as shown in Fig. 3, a nickel surface and a backing of other suitable metal, alloy or composition, for example, lead, or lead and zinc. The mold so formed is then ready to receive the plastic mass employed for producing the artificial teeth.

It will be understood that the invention is not limited to the particular construction shown in the drawings, neither is it limited to the use of the material specified for producing the metal duplicate, or backing; while further it must be understood that metals other than nickel may be employed as the material to be deposited in which case of course the anode, and electrolyte of the electrolytic apparatus will be different from those described.

I claim:

1. The method of manufacture of artificial teeth which consists in pressing an original in a mold, producing a metallic duplicate thereof, suspending said duplicate in an electrolytic bath to coat the same, removing said metallic duplicate from said coating and pressing a plastic mass into the cavities left on said removal.

2. The method of manufacture of artificial teeth which consists in pressing the original in a mold, producing a metallic duplicate thereof, suspending said duplicate in an electrolytic bath to coat the same, casting a metallic backing on said coating, removing said metallic duplicate from said coating and pressing a plastic mass into the cavities left on said removal.

3. The method of manufacture of artificial teeth which consists in forming a metallic duplicate of the original in a composition of lead and zinc, coating said duplicate electrolytically with nickel, removing coated duplicate from the electrolytic bath, casting a backing on said nickel coating, removing the metallic duplicates and pressing a plastic mass into the cavities left on said removal, substantially as described.

4. The method of manufacture of artificial teeth which consists in forming a metallic duplicate thereof, coating said duplicate electrolytically, removing said coated duplicate from the electrolyte at various stages, forming fresh enlarged metal copies therefrom, replacing said coated duplicate in the electrolyte, removing said metallic duplicate from the electrolyte when thickly coated, casting a metal backing thereon, removing the metallic duplicate and pressing a plastic mass into the cavities left on said removal.

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

HEINRICH AUGUST WIENAND.

Witnesses:
CARL GRUND,
JEAN GRUND.