Nov. 15, 1927.

1,649,312

A. K. LAUKEL

ELECTROLYTIC CORE BOX

Filed April 15, 1924

Fig. 1.

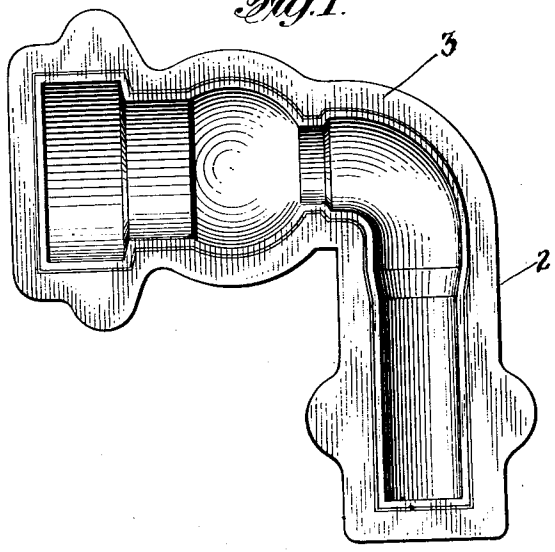


Fig. 2.

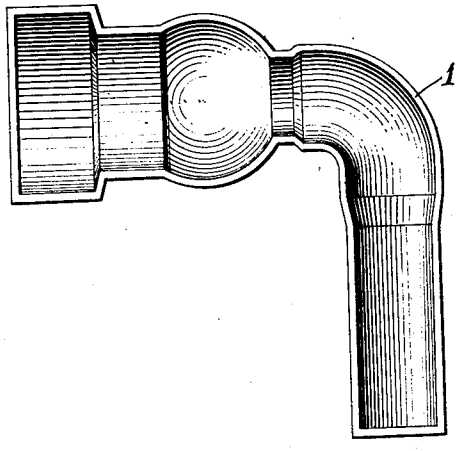
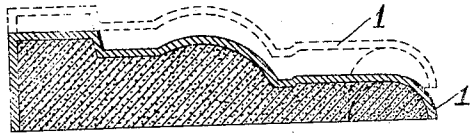


Fig. 3.



INVENTOR

Arthur K. Laukel

BY

Prindle, Wright, Neal and Bean

ATTORNEYS.

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UNITED STATES PATENT OFFICE.

ARTHUR K. LAUKEL, OF DETROIT, MICHIGAN.

ELECTROLYTIC CORE BOX.

Application filed April 15, 1924. Serial No. 706,623.

This invention relates to a new electrolytic core box and a method of making the same, and more particularly to one which is reinforced by cast metal and is furnished with hard wearing surfaces.

It is an object of this invention to provide an electrolytic core box which shall contain a very smooth core molding surface and particularly one which is not manufactured by the aid of filing or scraping, or other forms of laborious work on core molding surfaces. It is also an object to make such a core box of light metal provided with hard wearing surfaces of a different metal. It is an object to reduce the cost of production and reproduction and to make the inner shell removable and replaceable with another electrolytic shell. Further objects will appear as the following description of the preferred embodiment of the invention proceeds.

A preferred embodiment of the invention is shown on the accompanying drawings which form part of the specification and in said drawings,—

Fig. 1 represents a plan or interior view of one-half of the core box, the other half being a mirror image thereof;

Fig. 2 represents the interior electrolytic shell; and

Fig. 3 represents a section through the electrolytic shell showing it pulled away a short distance from the plaster of Paris model.

In said preferred embodiment there is shown a deposited electrolytic shell 1 which may be made in any suitable manner and can be made according to the methods disclosed in my previous application, Serial Number 563,188.

One way of making this electrolytic shell is to provide a working core box of wood or metal and thereupon to make a cast from the box with a molding material, such as wax, plaster of Paris or fusible metals. The surface in the case of wax or plaster of Paris should be made conductive by coating with conductive carbon or other material and the plaster of Paris should be water-proofed. Cathode wires are arranged in the usual manner and the metal is deposited on the surface of the form, the metal being preferably copper, nickel, zinc, iron, etc. When the shell is thick enough, say for example, $\frac{1}{32}$ of an inch at its thinnest point, it is removed from the electrolyte and backed up with a suitable cast metallic reinforcing box as will now be described.

As one procedure, the reinforcing box, which is designated 2, may be cast separately in a suitable manner and it is given an interior configuration corresponding to the electrolytic shell. The shells are tinned with a solder and after tinning the deposited shell is placed within the cast reinforcing box 2, whereupon they are heated and molten solder is poured in between the shells. Depth allowances are made on the deposited shell so that the cast shell can be ground or machined level and to the correct height in relation to the deposited shell.

The working faces 3 of the core box may now be plated with such metals as copper, iron, nickel, zinc, etc. to prevent exposure of the solder and to increase the wearing qualities. This will, of course, necessitate the grinding or machining of the working faces 10 or 15/1000 of an inch lower than the true height and the subsequent building up by electrolytical deposition followed by regrinding or machining to the true height. The plating is done by deposition in the usual manner after having insulated all other parts of the mold except the surface 3.

Another method of forming the outer box 2 is to cast it directly on the shell 1, thus eliminating the solder. The shell 1 is first tinned with some suitable metal or alloy which will readily alloy with the metal poured on it. In the case of aluminum it would be desirable to use tin or tin zinc alloy and then form the casting.

The reinforcing box 2 is preferably made of aluminum in order to reduce the weight so that the molder can judge better as to how the cores are leaving the box. It is preferable to have a working face on the aluminum cast made of a different metal so as to provide a good working surface. Such a surface is fastened on mechanically and the metal may be steel, brass, bronze, etc. The top metal plate is provided for the box 2 only and thereafter the surfaces 3 are provided with deposited metal as above described. It is possible, however, to provide the top metal plate over the entire surface 3 and thus dispense with the later deposition.

By following the described process any number of core boxes can be made that are

true reproductions of the original and with the utmost exactness; the cost of reproduction is less than in former practice, and, of course, the inner shell is replaceable where it is soldered within the outer box. A further advantage consists in the provision of hard wearing surfaces by virtue of which the core box will last a longer time. Of particular importance is the very smooth configuration of the interior of the electrolytic shell. This is formed to exact form without the necessity of filing, scraping or altering the shape in any manner, thus dispensing with the previously necessary hard and laborious work in reducing the size to the proper dimensions each to the thousandths of an inch. It will, therefore, be apparent that by the present method and the present core box a large scrap reduction of core boxes is possible, and true reproductions of the originals, without the necessity of calculations for one or more shrinkages.

The core box may be in the simple or gang form, open or closed on the ends, or hand or machine filled. After the core box is worn by use, metal may be again deposited on the worn surfaces to permit remachining to the proper height with respect to the core molding surfaces.

As many apparently widely different embodiments of this invention may be made without departing from the spirit thereof, it is to be understood that in the foregoing specification I do not limit myself to the exact embodiments described, except as indicated in the following patent claims.

I claim:

1. A core box formed from electrolytically deposited metal reinforced by a cast metal structure.

2. A core box formed from electrolytically deposited metal and permanently attached to a surrounding box of cast aluminum metal.

3. A core box formed from electrolytically deposited metal and reinforced by a cast metal box, the wearing surfaces of the core box consisting of electrolytically deposited metal.

4. A core box formed from electrolytically deposited metal integrally united to a surrounding re-enforcing cast metal box, the wearing surfaces of the core box being covered with electrolytically deposited metal.

5. A core box formed from an electrolytically deposited metal and reinforced by a cast metal box of aluminum which is provided with a wearing face composed of another metal.

6. A core box formed from electrolytically deposited metal re-enforced by a cast aluminum box integrally united thereto, which is provided with a wearing face composed of another metal.

In testimony that I claim the foregoing, I have hereunto set my hand this 12 day of April, 1924.

ARTHUR K. LAUKEL.