

(No Model.)

H. JAEGER.
PROCESS OF MAKING TIN OXID.

No. 585,522.

Patented June 29, 1897.

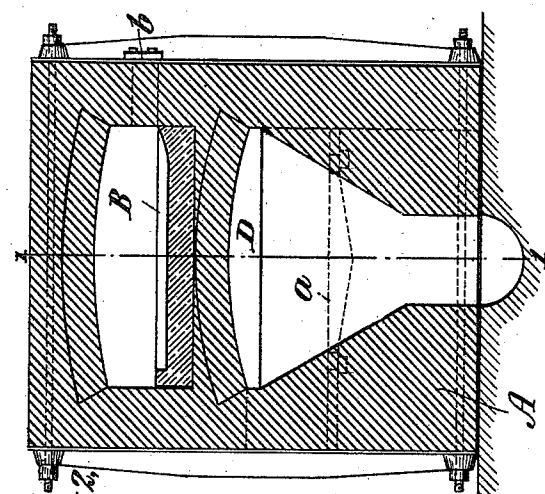
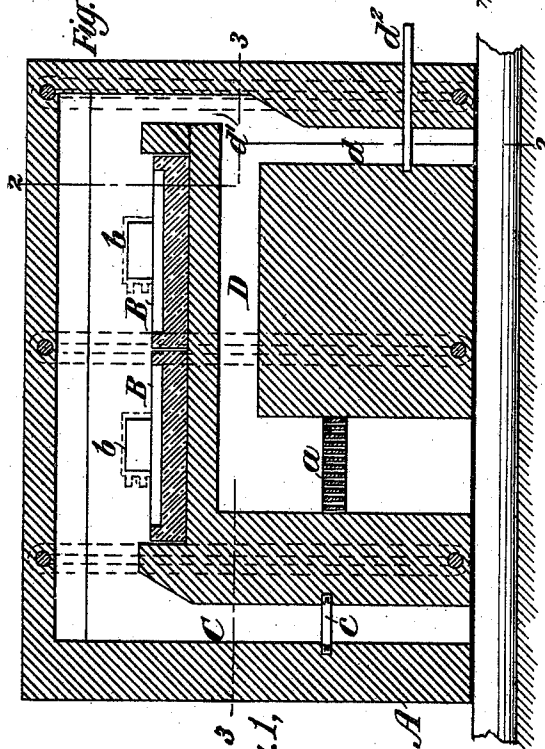


Fig. 2.

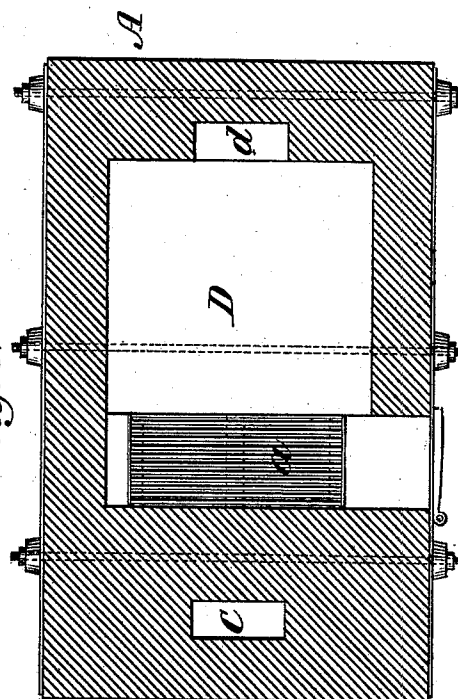


WITNESSES:

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Fig. 1.

Fig. 3.



INVENTOR

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HERMANN JAEGER, OF KALK, GERMANY, ASSIGNOR TO WASSERMANN & JAEGER, OF SAME PLACE.

PROCESS OF MAKING TIN OXID.

SPECIFICATION forming part of Letters Patent No. 585,522, dated June 29, 1897.

Application filed August 27, 1895. Serial No. 560,695. (No specimens.)

To all whom it may concern:

Be it known that I, HERMANN JAEGER, a subject of the Emperor of Germany, and a resident of Kalk, near Cologne, Germany, have invented certain new and useful Improvements in the Manufacture of Tin Oxid, of which the following is a specification.

This invention relates to certain improvements in the manufacture of tin oxid, and has for its object to obtain a perfectly white product which is greatly suited for enameling purposes.

Up to the date of this present invention the production of a perfectly white tin oxid which is suitable to be used for enameling purposes has met with great difficulties.

In producing this oxid by heating metallic tin in the presence of air a dirty-colored product is obtained which does not impart a white color to the enamel. A purer white color can be obtained by adding lead to the tin to be oxidized, but the product thus obtained is poisonous in consequence of the lead present and can therefore not be used for enameling kitchen furniture or tableware. In consequence of these facts a tin oxid has been used which has been obtained by oxidizing metallic tin by means of nitric acid, but the oxid thus obtained has the disadvantage that it contains nitric acid and nitric-acid salts, which render the enamel dull and without luster. The present invention overcomes these difficulties. It is based on the fact that the dirty color of the oxid which has been obtained by heating metallic tin in the presence of air is caused by lower degrees of oxidation of the tin, these lower oxids being all colored and obtained as noxious by-products in such manufacture. Now I have found that it is possible to prevent the formation of these lower oxids of the tin if the tin in the furnace is brought at once to the proper temperature and if care is taken that as much air is admitted as to always secure an excess of oxygen over the whole surface of the molten tin.

In carrying out my invention I proceed as follows: The furnace in which the oxid has to be made is of that kind which allows the flame to go over the whole surface of the tin, care being taken that a sufficient quantity of

air can have direct access to the tin-bath, and that the flame itself contains still an excess of atmospheric air.

The accompanying drawings represent an apparatus designed for the purpose of carrying my invention into effect.

In the drawings, Figure 1 represents a longitudinal vertical section of the apparatus. Fig. 2 is a transverse cross-section on the plane of the broken line 2 2 of Fig. 1. Fig. 3 is a horizontal section on the plane of the line 3 3, Fig. 1.

Similar letters of reference designate corresponding parts in all figures.

A designates a furnace having a grate *a*, which may be charged with fuel from the side, as shown best in Fig. 3.

The melting-pans are shown at B, access to which may be had through the openings *b* for the purpose of introducing the tin, removing the oxid, &c. These openings are also used for the admission of air at the proper times, air also finding its way in with the flame and playing over the surface of the melted tin when permitted to do so.

The construction of the furnace is such that the burning gases and heated products of combustion may be caused to pass over the tin or led directly to the waste-flue.

C is a flue communicating with the open space above the melting-pans. It is provided with a damper or slide *c* and extends downwardly, emptying into a waste-flue C'.

The passage-way D, leading from the space above the grate, divides at the opposite end of the furnace into two branches *d* *d'*, the former provided with a damper *d*², emptying into the waste-flue C', the latter communicating with the space above the melting-pans.

It is evident that by closing damper *d*² and opening damper *c* the heated and burning gases from the fire may be caused to pass over the melting-pans and discharged into the waste-flue C' via flue C. If, however, damper *c* be closed and damper *d*² opened, the gases pass directly to waste-flue C' via passage or flue *d*.

Suitable doors for closing the various openings are provided.

As soon as the tin has attained the neces-

sary temperature, which is approximately 1,200° centigrade, and begins to oxidize, all doors are opened, the slag which appears on the tin-bath is removed, and now the tin oxid
5 which is continually produced is continually removed from the furnace or pushed to a space which is left behind the metal-bath, where the oxid is further heated and afterward removed through openings *b*.

10 The tin oxid thus obtained is still mixed with fine metallic particles, from which it is separated by washing or by passing it through a metallic or silk sieve with very fine meshes.

15 If all tin contained in the furnace has been oxidized, a new charge is brought in and the process carried on as above.

The tin oxid thus obtained is not poisonous, has a pure white color, and gives a bright

white enamel which is suitable for every purpose.

I claim—

The process of manufacturing tin oxid, consisting in raising metallic tin to a high temperature, approximately 1,200° centigrade, in the absence of air, then, when at said high
25 temperature, admitting abundance of air to the molten metal, and finally removing the tin oxid formed, substantially as specified.

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

HERMANN JAEGER.

Witnesses:

WILLIAM A. MADDEN,
SOPHIE NAGEL.