

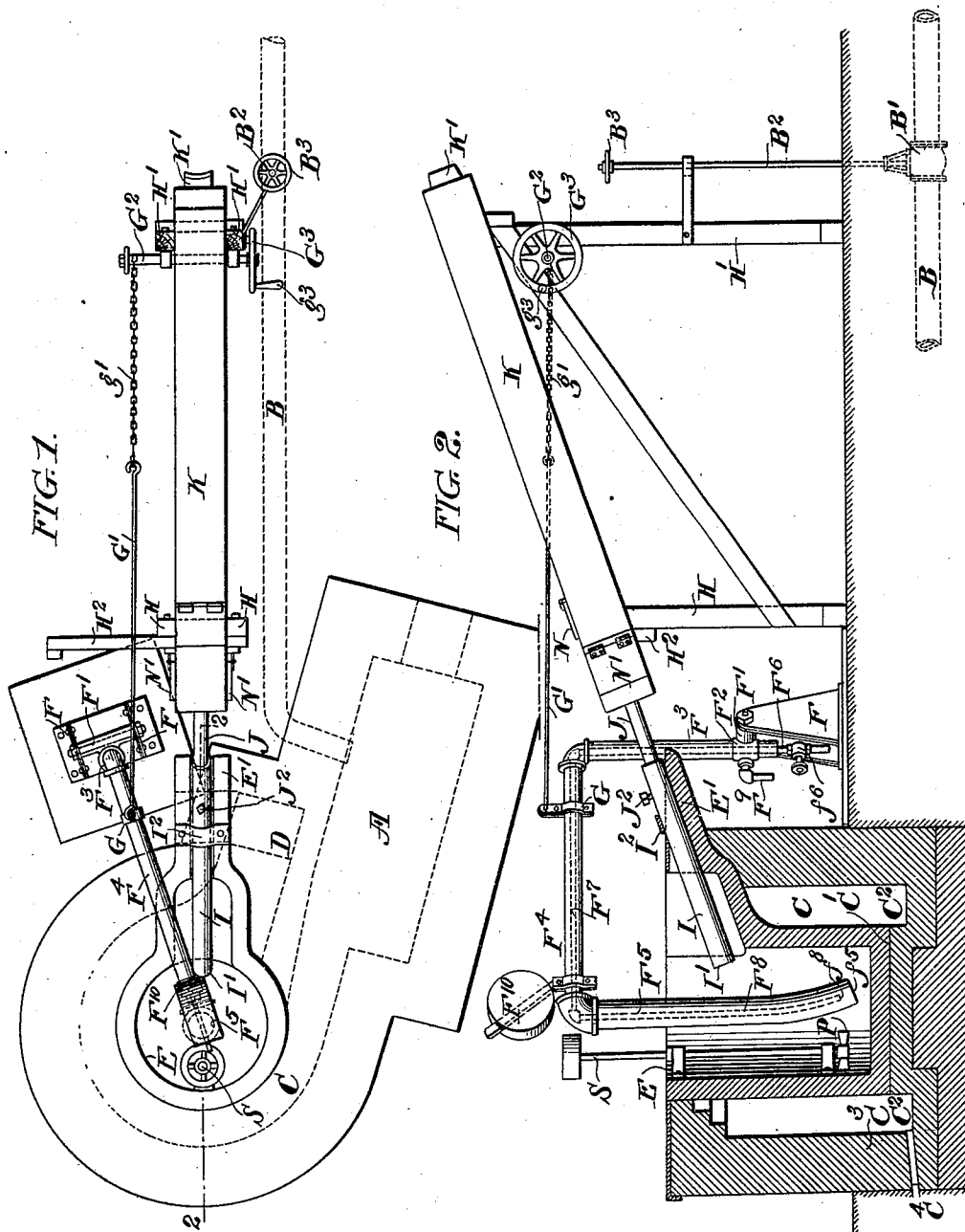
No. 683,580.

Patented Oct. 1, 1901.

F. W. TAYLOR & H. L. GANTT.
METAL BATH.

(Application filed July 21, 1900.)

(No Model.)



WITNESSES:
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UNITED STATES PATENT OFFICE.

FREDERICK W. TAYLOR AND HENRY L. GANTT, OF SOUTH BETHLEHEM, PENNSYLVANIA, ASSIGNORS TO THE BETHLEHEM STEEL COMPANY, OF SAME PLACE.

METAL BATH.

SPECIFICATION forming part of Letters Patent No. 683,580, dated October 1, 1901.

Application filed July 21, 1900. Serial No. 24,375. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK W. TAYLOR and HENRY L. GANTT, citizens of the United States of America, residing in South Bethlehem, in the county of Northampton, in the State of Pennsylvania, have invented a new and useful Improvement in Metal Baths, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

Our invention relates to a metal bath such as is used for heating and cooling metal-cutting tools, such device, because melted lead is commonly used, being generally known as "lead-pots."

The object of our invention is to provide a metal bath or lead-pot in which the temperature of the melted metal can be regulated with great accuracy, our invention consisting in providing a pot adapted to hold the metal, with means, preferably regulable, for heating it and with means for cooling it, consisting of a cooling device and mechanism whereby said device can be inserted in and withdrawn from the bath at will. By preference we use as the cooling device a fluid-conduit, through which water or air is forced to flow and which when immersed in the bath cools it down with speed regulable by the extent of immersion. It is also desirable that the melted metal of the bath should be kept in circulation, so as to insure an even temperature throughout the bath, and we provide means for this purpose.

Reference being now had to the drawings, in which our invention is illustrated, Figure 1 is a plan view of our metal-bath apparatus; and Fig. 2 a side elevation, partly shown in section, on the line 2 2 of Fig. 1.

A indicates a furnace for heating the pot containing the melted metal.

B is an air-blast pipe for maintaining combustion in the furnace, and, as shown, it is provided with a throttle-valve (indicated at B') and operated through a spindle B² by a hand-wheel B³. By moving the throttle-valve the combustion in the furnace can be lessened or increased at will.

C is a flue extending from the furnace A and surrounding the lead-pot, (indicated at E.)

C' indicates a slightly-raised platform upon

which the lead-pot stands; C², a channel formed through wall C³ of the flue, through which melted metal can escape from the flue at the point C⁴ in case of breakage of the lead-pot.

D indicates a continuation of the flue C, leading to a stack. (Not shown.)

E, as already noted, is the lead-pot, which, as shown, is provided with a sloping lateral extension on top, as indicated at E'.

F F indicate standards, to the upper ends of which is pivoted the oscillatable shaft F', to which in turn is secured, by means of a laterally-projecting annulus F², a tube F³, connected at top with a second tube F⁴, with the other end of which latter tube connects a third tube F⁵, having a closed end, as indicated at f⁵.

F⁶ F⁷ F⁸ indicate a system of interior tubes, the end f⁸ of the tube F⁸ being opened.

f⁶ indicates a valve in the pipe F⁶, and F⁹ indicates an escape-pipe leading from the bottom of the pipe F³.

F¹⁰ indicates a weight which normally holds the pipe system in the position indicated in Figs. 1 and 2—that is to say, with the pipe F⁸ immersed in the pot E. The end of the pipe F⁶ is connected with a source of water-supply, and the water flows through the pipes F⁶ F⁷ F⁸ and backward through the pipes F⁵ F⁴ F³, escaping through the waste-pipe F⁹.

G is a clamp secured to the pipe F⁴ and connected by a rod and chain, as indicated at G' g', with a winding-spindle G², actuated by a hand-wheel G³, g³ indicating a handle attached to said wheel.

H and H' indicate the framing and support for the body of a pyrometer, H² indicating a cross-bar extending out from said framing to the rear of the pivoted cooling-pipe system and serving as a stop to limit the distance to which said pipes can be drawn back.

I indicates a metal pipe having a closed end I', which is supported in the lateral extension E' of the pot and held in position by means of a clamping-brace I².

J is a pipe sliding in the open end of the pipe I and held to it by means of a clamping-screw J².

K indicates a pyrometer-box or sight-tube,

into which leads the pipe J, K' being the sight end of the box.

N and N' indicate doors leading into the pyrometer-box.

5 The pyrometer shown is not illustrated in detail, because our metallic-bath apparatus can be used in connection with any pyrom-
eter or other means for determining tempera-
10 ture, and also because the device illustrated, and particularly the use of a closed-end tube I, forms the subject-matter of our pending application for Letters Patent filed October 23, 1899, Serial No. 734,456.

P indicates a stirring-wheel situated in the
15 pot E and supported on the end of a shaft S, which by means of a belt-wheel at its top or any other convenient mechanism should be kept in constant rotation, so as to keep the melted metal in the pot in circulation.

20 In operation the pot E is filled or partly filled with fusible metal, such as lead, which is fused and kept in a melted condition by means of the furnace A, the products of combustion passing through the flue C. As
25 already stated, the energy of the fire in the furnace can be regulated by means of the throttle-valve B', regulating the admission of air to the furnace; but the temperature of the bath is further regulated with rapidity
30 and great nicety by means of the cooling flue and conduit described, which when the bath is too hot is permitted to enter the bath, rapidly cooling the metal, the fluid-conduit being withdrawn partly or wholly when the de-
35 sired temperature is reached or approximated. That all parts of the bath shall attain a uniform temperature is insured by the circulating paddle-wheel P, and the operator is enabled to ascertain the true temperature of
40 the bath in the construction shown by means of the pyrometer K.

The importance in the manufacture and tempering of tools of having a bath which

can be brought to and maintained at a de-
sired temperature is well understood in the 45
art, and our apparatus enables this most de-
sirable result to be accomplished with the
greatest nicety.

Having now described our invention, what we claim as new, and desire to secure by Let- 50
ters Patent, is—

1. A pot, as E, adapted to contain melted metal and means for heating it, in combina-
tion with a cooling device and means for in- 55
serting said cooling device in and withdraw-
ing it from the pot at will.

2. A pot, as E, adapted to contain melted metal and means for heating it, in combina-
tion with means for keeping the melted metal 60
in the pot in circulation, a cooling device and
means for inserting said cooling device in
and withdrawing it from the pot at will.

3. A pot, as E, adapted to contain melted metal and regulable means for heating it, in
combination with a cooling device and means 65
for inserting said cooling device in and with-
drawing it from the pot at will.

4. A pot, as E, adapted to contain melted metal and means for heating it, in combina-
tion with a cold-fluid conduit connected to a 70
source of said fluid, and means for inserting
said fluid-conduit into and withdrawing it
from the pot at will.

5. A pot, as E, adapted to contain melted metal and having means for heating it, in 75
combination with a cold-fluid conduit con-
nected to a source of said fluid, a pivotal sup-
port for said conduit arranged to let it turn
from a position within the pot to one with-
out said pot and means for turning said con- 80
duit on its pivot as described.

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