

E. MOREWOOD & J. H. ROGERS.
Coating Metals.

No. 230,488.

Patented July 27, 1880.

FIG.1.

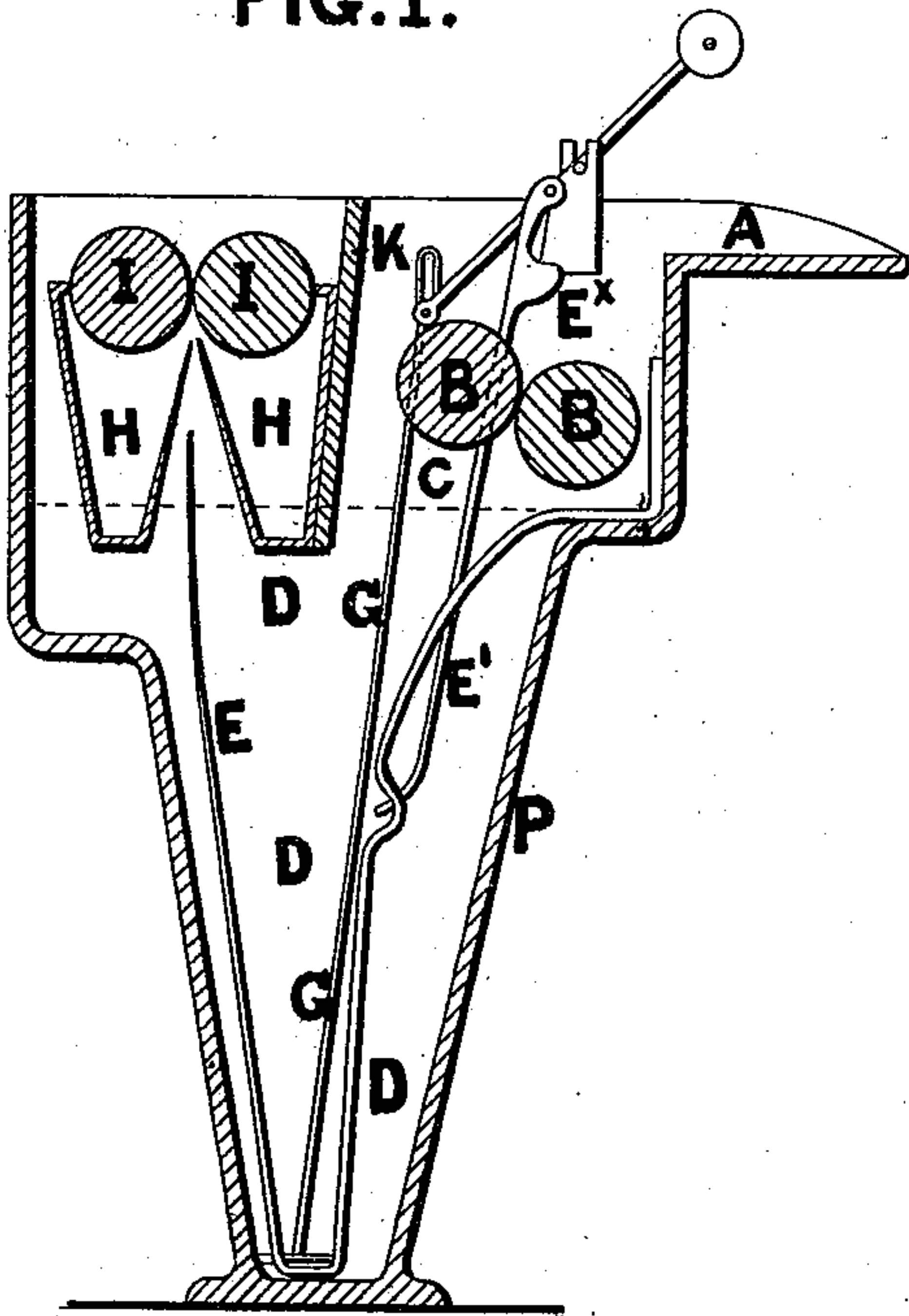


FIG.2.

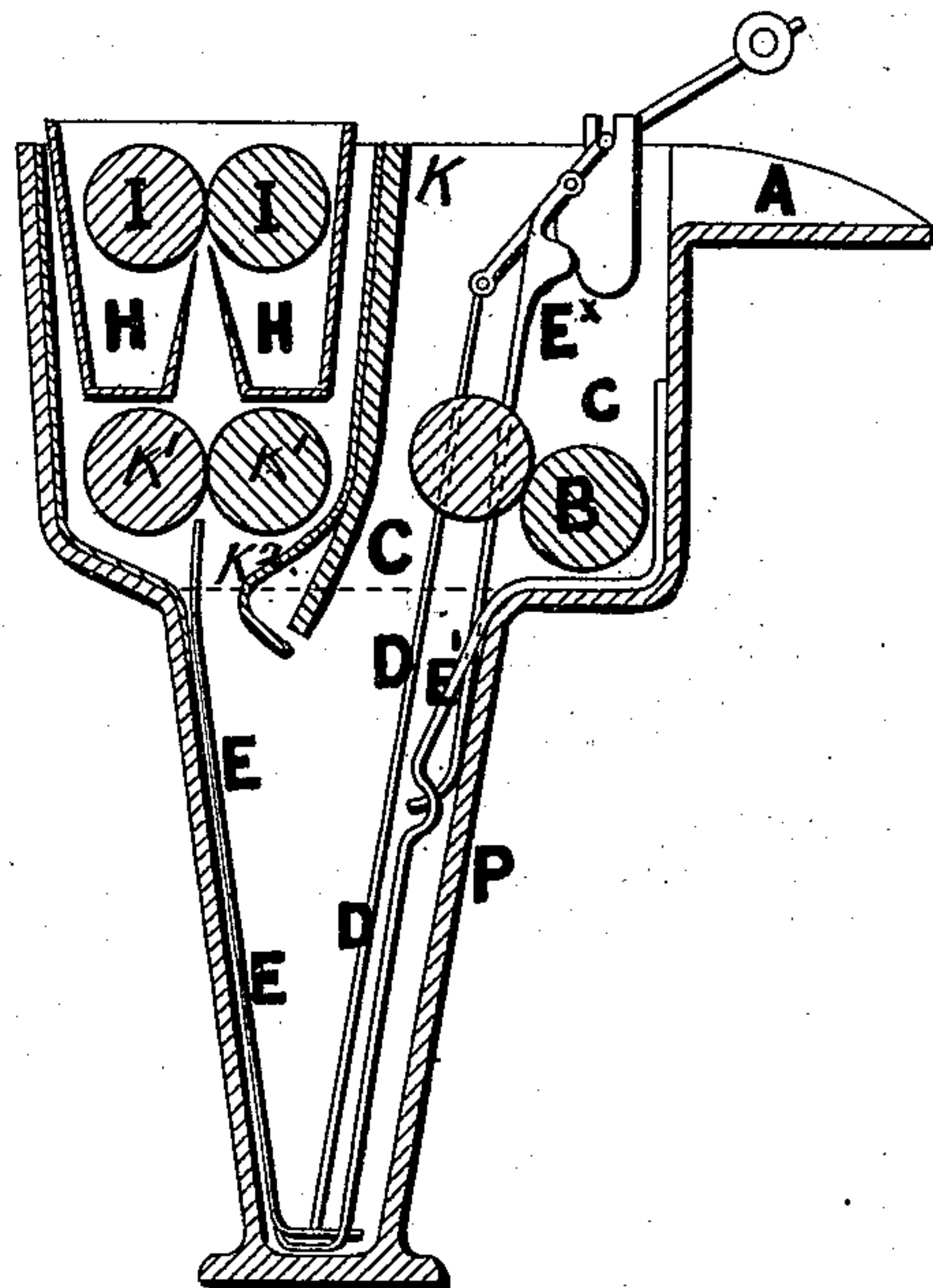
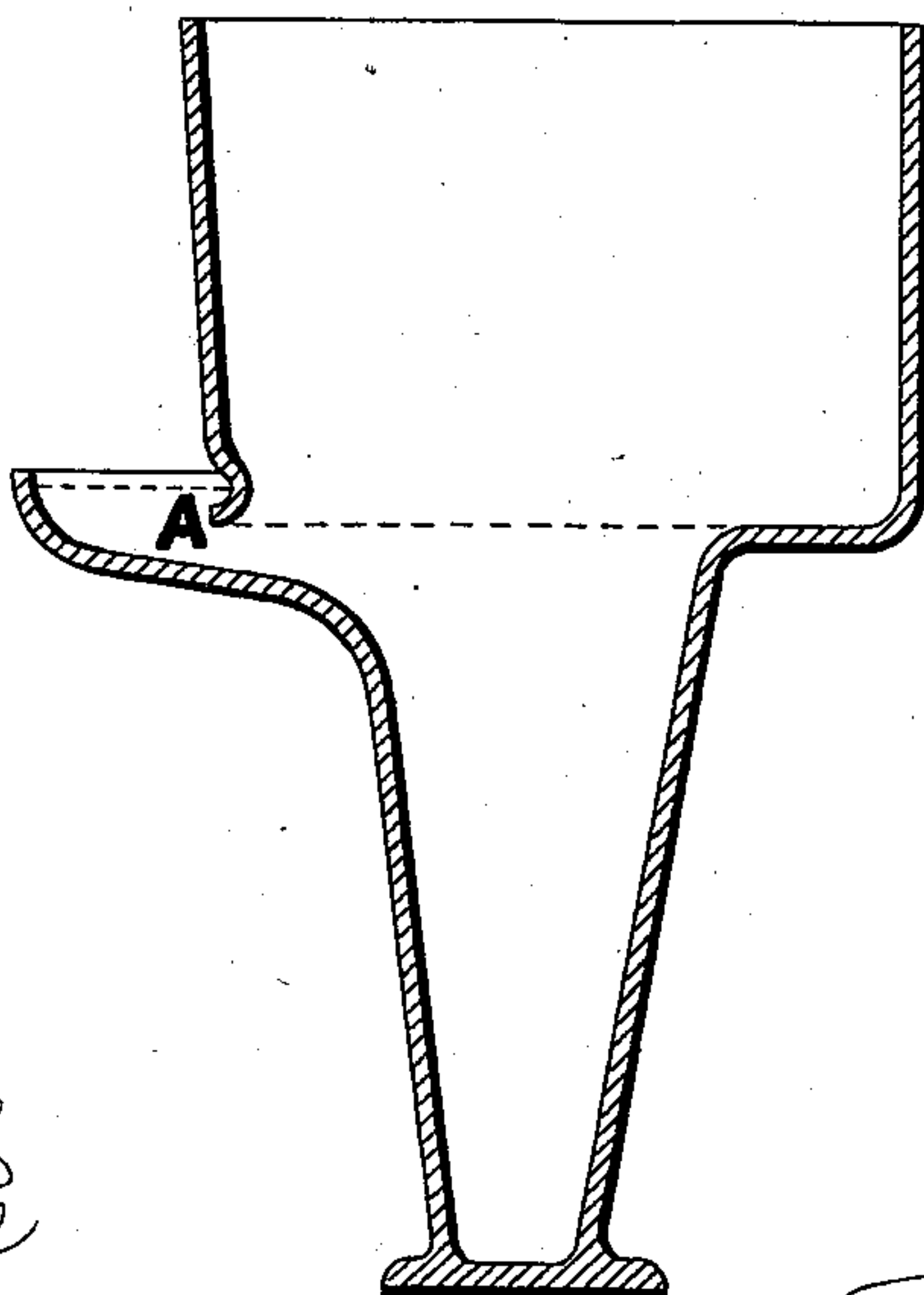


FIG.3.



Witnesses

Char. N. Smith
Harold Serrell

Inventors

Edmund Morewood
John H. Rogers
per Lemuel W. Serrell
att'y

UNITED STATES PATENT OFFICE.

EDMUND MOREWOOD AND JOHN HENRY ROGERS, OF LLANELLY, ENGLAND.

COATING METAL.

SPECIFICATION forming part of Letters Patent No. 230,488, dated July 27, 1880.

Application filed October 13, 1879. Patented in England December 24, 1873.

To all whom it may concern:

Be it known that we, EDMUND MOREWOOD and JOHN HENRY ROGERS, both of Llanelly, in the county of Carmarthen, England, tin-plate manufacturers, have invented certain Improvements in Coating Metal Plates with Tin or Terne Metals, of which the following is a specification.

British Patent No. 4,242, dated 24th December, 1873, was granted for this invention.

In the specification of a previous United States Patent granted to us, dated 4th January, 1876, No. 171,688, are described automatic modes and means for righting the grease used in the preparation of the iron, in order that its surface may be rendered suitable for subsequently combining with the molten coating metal, and in the specification of another previous United States Patent granted to Edmund Morewood on the 11th of April, 1876, No. 176,032, are described mechanical modes and means for the same purpose.

Before the dates of the patents above alluded to the clean black plates had to remain a considerable time immersed in the grease contained in a preparatory grease-pot in order to be fit for immersion in the metal-coating pot; but owing to the grease being kept or rendered in a fitter state by the arrangements described in the patent specifications alluded to, the clean black plate was rendered fit for the coating-metal by simply passing it through the grease confined in a flux-box on the surface of the coating-metal at the entrance side.

The use of other fluxes than grease is more or less undesirable for preparing the clean black plate for the metal-coating, as most of them give the tin or terne plates a tendency to rust.

Now, the object of this present invention is to enable us, while using palm-oil or other usual greasy matter as a preparatory flux on the entrance side of the coating-pot, as stated, to provide at the exit side of the said same coating-pot means or appliances for lessening and improving any imperfections or deficiencies in the coating which have been obtained during the rapid passage through the coating-metal, as it is very desirable to complete the coating before allowing the coated surface to come in contact with cold air.

The object of this invention is also to expedite the process of coating and to enable us (especially for the ordinary thickness of tin and terne plates) to accomplish the coating process in one pot, which we call an "amphibious pot," because it serves the purpose of the preparatory grease-pot as well as the coating pot or pots and the finishing grease-pot.

The preparatory grease-pot, if used in combination with the amphibious pot, which forms a main part of this invention, we keep at or a little below the temperature of the coating-metal in the amphibious pot.

The amphibious pot contains a pair of rollers revolving in the grease in the flux-box at the entrance side, and it has one or more pairs of rollers we call "improved rollers" at the exit side, and which revolve in molten coating-metal of the best quality contained in troughs placed in the finishing-grease. We keep the grease on the top of the coating-metal on the exit side separate from that at the entrance side. The grease on the entrance side may be kept in proper condition by means of the aforesaid automatic or mechanical circulation. Sometimes, especially for making terne-plates, we use little or no grease on the exit side. We prefer to cause the aforesaid improving-rollers on the exit side to revolve in troughs arranged as described in the specification of our United States Patent dated 4th January, 1876, No. 171,687. These troughs protect the plates while passing up between them from the outer or cooler air, and if their lower parts dip into the coating-metal in the amphibious pot they form partitions, confining the grease on the entrance side or separating it from that on the exit side, if the latter be used on the top of the coating-metal; or when we use grease on the surface of the coating-metal on the exit side of the amphibious pot we confine or limit the quantity of grease in contact with the surface of the coating-metal by placing it in a compartment or box similar in character to a flux-box, the sides acting, in fact, as partitions, and as the plates rise up from the coating-metal they pass up through the opening at the bottom of such exit flux-box, which opening dips into the coating-metal, and, rising through the grease, they pass up between the metal-coated rollers.

Figure 1 is a vertical section through the amphibious coating grease-pot P. It is heated by fire in the usual way. A is an overflow-channel by which the grease, if brought over from a preparatory grease-pot, may flow back to such preparatory pot. B B are carrying-rollers, through which the plate is passed from the grease-chamber C C into the coating-metal D D, from whence it is passed by the finger E' of the cradle against the guide E, and then is raised by the lifting-bar G between the troughs H H, containing fresh and good quality metal or grease, into and through the nip of the finishing-rollers I I. K is a partition which dips about two inches into the coating-metal and confines the grease C C to the entrance when the adjoining trough H is removed. The troughs H H also form other partitions. The rollers B B and I I are kept rotating by steam or other power. The rollers I I are supplied with coating-metal from the troughs, or, if the troughs are filled with grease, by ladle. E^x is a projection on the finger E', which, when the finger is raised by the lifting-lever of the cradle, acts against a fixed projection and so throws the finger forward.

Fig. 2 also represents an amphibious coating and grease pot, P, with the addition of a lower pair of improving-rollers, K' K', on the exit side. These rollers K' are placed in a flux-box, K², which forms a partition by which the grease contained in it is separated from that on the entrance side C, and it also forms a clear space of surface of coating-metal from which the scruff may be withdrawn. This may conveniently be done by forming the pot P with a hole and lip at the surface of the melted metal, as shown at A, Fig. 3. We can thus keep the surface of the melted coating-metal on the exit side of the pot as clear as

possible from scruff and dirt by means of an instrument shaped like a small spade, with a long handle so bent as to pass through the said hole in the wall of the pot and under the intervening lip or partition at A.

After withdrawing the plates from this amphibious pot we may pass the plates into a finishing-roller grease-pot, in which we give them a suitable finish by a second or twice rolling in grease, as is well understood in the case of plates of heavy gage or requiring superior finish; but any second coating-metal pot is unnecessary.

We do not claim coating plates in one operation by means of coating-rollers contained in a flux-pot, as described in our previous patent, No. 172,148, dated January 11, 1876; but

We claim—

1. In an apparatus for coating and finishing metal plates with tin or terne in one operation, the pot P, provided with a partition, K, and with entrance-rollers and cradle, or equivalent guiding appliance, in combination with rollers I on the exit side, substantially as described.

2. The coating-pot P, partition K, and rollers I, in combination with the improving-rollers K', beneath the rollers I, and the flux-box K², substantially as set forth.

3. The pot P, provided with the lateral opening and lip A, Fig. 3, near the surface of the coating metal, for allowing the scruff or dirt to be withdrawn beneath the flux, substantially as set forth.

EDMUND MOREWOOD.
JOHN HENRY ROGERS.

Witnesses:

B. JONES,
Solicitor, Llanelly.
T. H. JENKINS,
His clerk.