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APPARATUS FOR COATING WITH METAL

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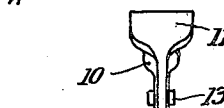
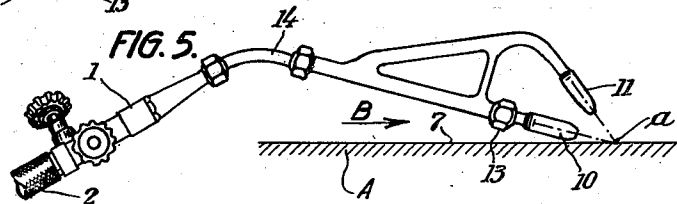
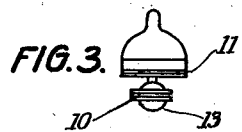
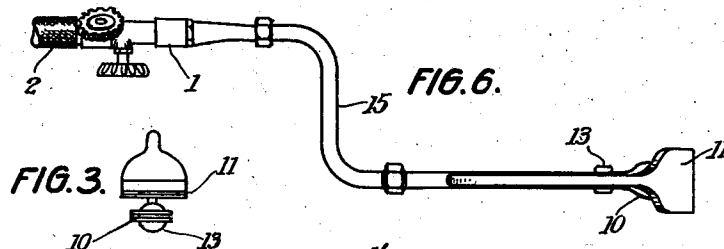
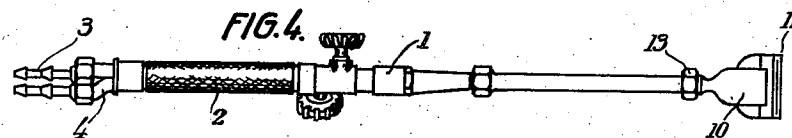
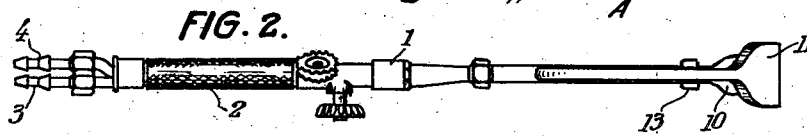
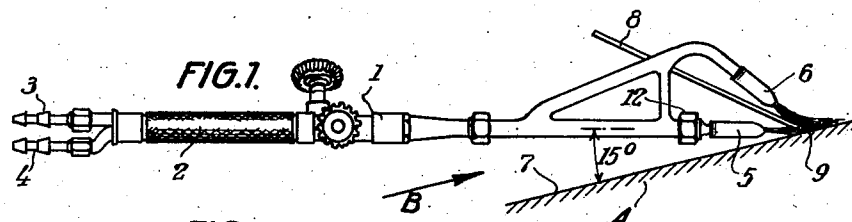


FIG. 7.

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UNITED STATES PATENT OFFICE

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APPARATUS FOR COATING WITH METAL

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In Germany December 21, 1937

2 Claims. (Cl. 91—12.2)

It is known to provide a parent metal with a coating of metal by means of a burner or blow-pipe, the burner or blow-pipe being held at a sharply acute angle (less than 30° , advantageously at approximately an angle of from 15° to 10°) to the surface of the parent metal. Experience has shown that the metal to be coated is melted from a metal rod by forming a solid bondage with the parent metal as when soldering, without any considerable heating of the parent metal. If large quantities or layers of material are to be applied to the parent metal having large cross-sectional areas, the burner or blow-pipe must be in use for a comparatively long time, that is to say, the distance the blow-pipe moves forward in a unit of time is relatively small.

This disadvantage is overcome by means of the method according to the invention.

According to the invention a burner or blow-pipe nozzle held at a sharply acute angle (less than 30° , advantageously at approximately an angle of from 15° to 10°) to the surface of the parent metal melts the fusible metal rod, while an additional blow-pipe or burner nozzle, by its additional heat, applies the metal layer over a wide area and, by its suction action advances the layer of molten metal from the fusible rod.

The invention is diagrammatically illustrated by way of example in the accompanying drawing. Figure 1 is a side view of a burner or blow-pipe according to the invention.

Figure 2 is a plan of one form of the burner or blow-pipe according to the invention.

Figure 3 is a corresponding front elevation.

Figure 4 is a corresponding plan view from below.

Figure 5 is a side view of a further modified construction.

Figures 6 and 7 are plan views of a still further modified construction.

Referring to the drawing, 1 is a burner tube having a holder 2 and pipe connections 3 and 4 for the admission of the appropriate gases. The burner is a multi-flame burner—in the example illustrated a double burner having two burner nozzles 5 and 6. The nozzle 5 is intended to be directed towards the surface 7 of the parent metal A by holding the burner tube 1 at a sharply acute angle; in the example illustrated the angle is 15° . It will be seen from Figure 1 that the burner nozzle 5 melts a suitable layer of material from a rod of fusible metal 8, as shown at 9. By means of the burner nozzle 6 a wide layer of the metal can be applied on the parent metal due to the additional heat from the nozzle

6 even when the two burners are pin (or jet) burners. The important point however is that the suction action of the burner nozzle 6 causes the layer of liquid metal from the fusible rod to move forward. This has the great advantage that the operation of such a burner is greatly accelerated and that it is possible to apply a metal layer or to introduce a mass of metal into a fault, blow-hole, crack, groove or the like in a much shorter time. The nozzle 6 may, if constructed as a jet nozzle, have a somewhat larger jet diameter than the nozzle 5.

In the burner according to Figures 2 to 4 the two nozzles are flat, and it will be seen that the additional nozzle 11 is wider than the fusing nozzle 10.

In a particularly advantageous construction the fusing nozzle 5, or 10, is provided interchangeable by means of a nut 12 or 13.

In one construction a slightly curved intermediate member 14 is provided between the burner tube 1 and the nozzles 5, 6 or 10, 11, whereby the whole burner can be very conveniently gripped at the necessary acute angle of the nozzle 5, or 10 (Figure 5).

The application or introduction of a metal layer along one of the long edges of a piece is made possible, according to Figure 6, by the introduction of a substantially S-shaped intermediate member 15 between the burner tube and the nozzles 10 and 11. A like purpose is served by a bend 16 according to Figure 7.

It will be seen from Figures 1 and 5 that the longitudinal axes of the co-operating nozzles are so disposed with respect to each other that when working, their point of intersection *a* lies approximately on the surface 7 of the parent metal A.

It will be understood that it is possible to construct the device in a manner in which still more nozzles are placed in front in the direction of movement B of the burner, the purpose of the further nozzles being to heat additional areas in the direction of movement of the burner in front of the point of intersection of the first two burner nozzles.

Any kinds of gas may be used with the blow-pipes according to the invention. Thus for example the blow-pipes constructed according to Figures 2 to 4 and 7 are particularly suitable for using a mixture of oxygen and coal gas. Should it be intended to use a mixture of acetylene and oxygen, it is advantageous also to use flat burners, but it is particularly advisable not to pass the mixture of acetylene and oxygen out through

a slot burner but through a row of separate juxtaposed nozzles.

We claim:

1. A blow pipe for use in coating a base metal
5 with a fusible metal consisting of a nozzle lying
in a single plane for directing a flame at an acute
angle onto the base metal, an angular nozzle dis-
posed above said first nozzle and having a flame
10 mentioned nozzle, both of said nozzles being con-
nected together, said angular nozzle directing a
flame at an acute angle with respect to the flame
of the first nozzle, the sum of the two above

mentioned acute angles when the blow pipe is
in use being less than 90° whereby the fusible
metal when supplied between the two nozzles is
fused by the first mentioned nozzle and is moved
forward of the pipe by the suction action cre-
ated by the widened orifice of said angular
nozzle. 5

2. A blow pipe as claimed in claim 1 in which
both of said nozzles are flattened in a plane at
right angles to the plane in which they lie. 10

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