

F. E. GOLDSMITH.
 APPARATUS FOR COATING.
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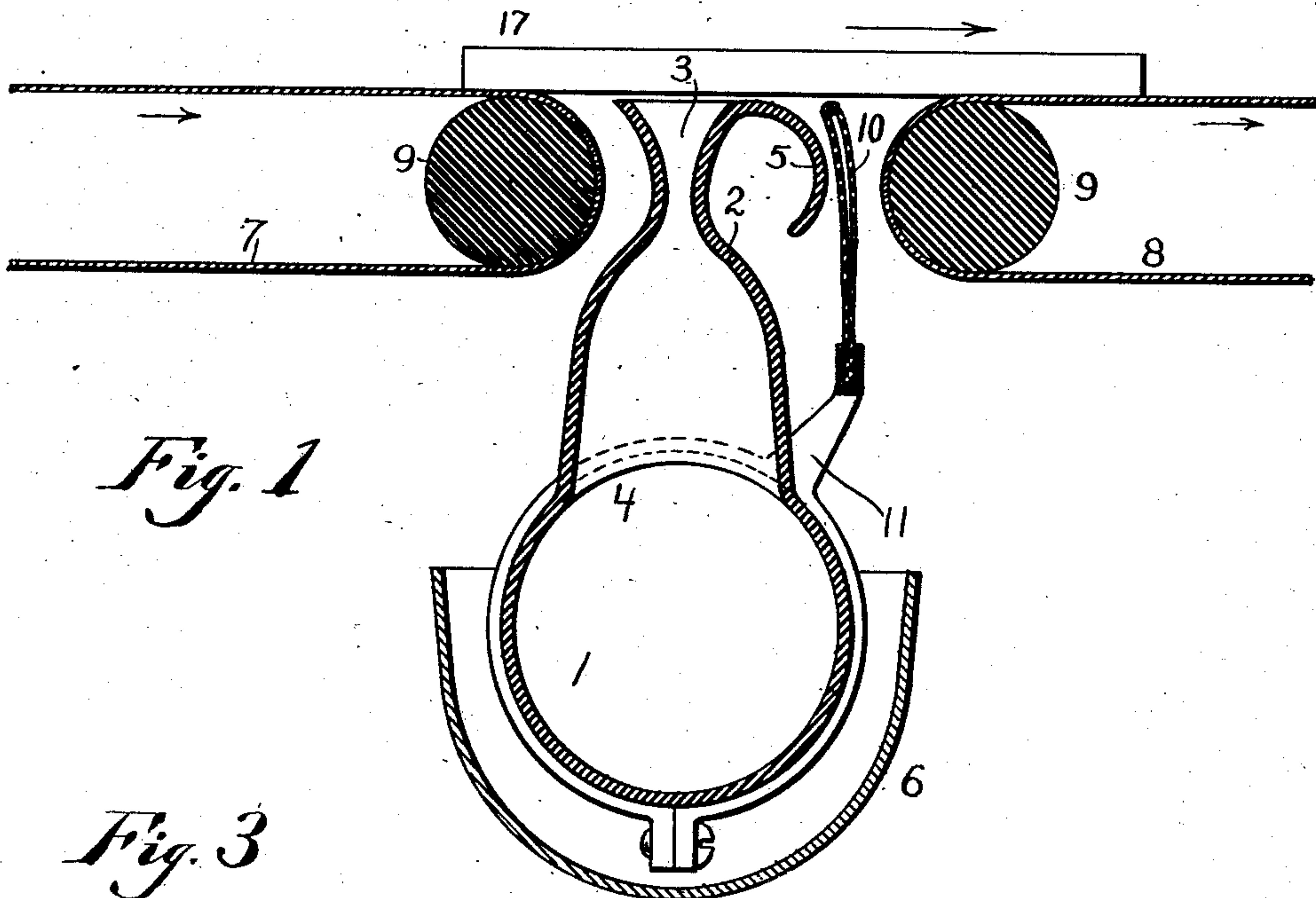


Fig. 1

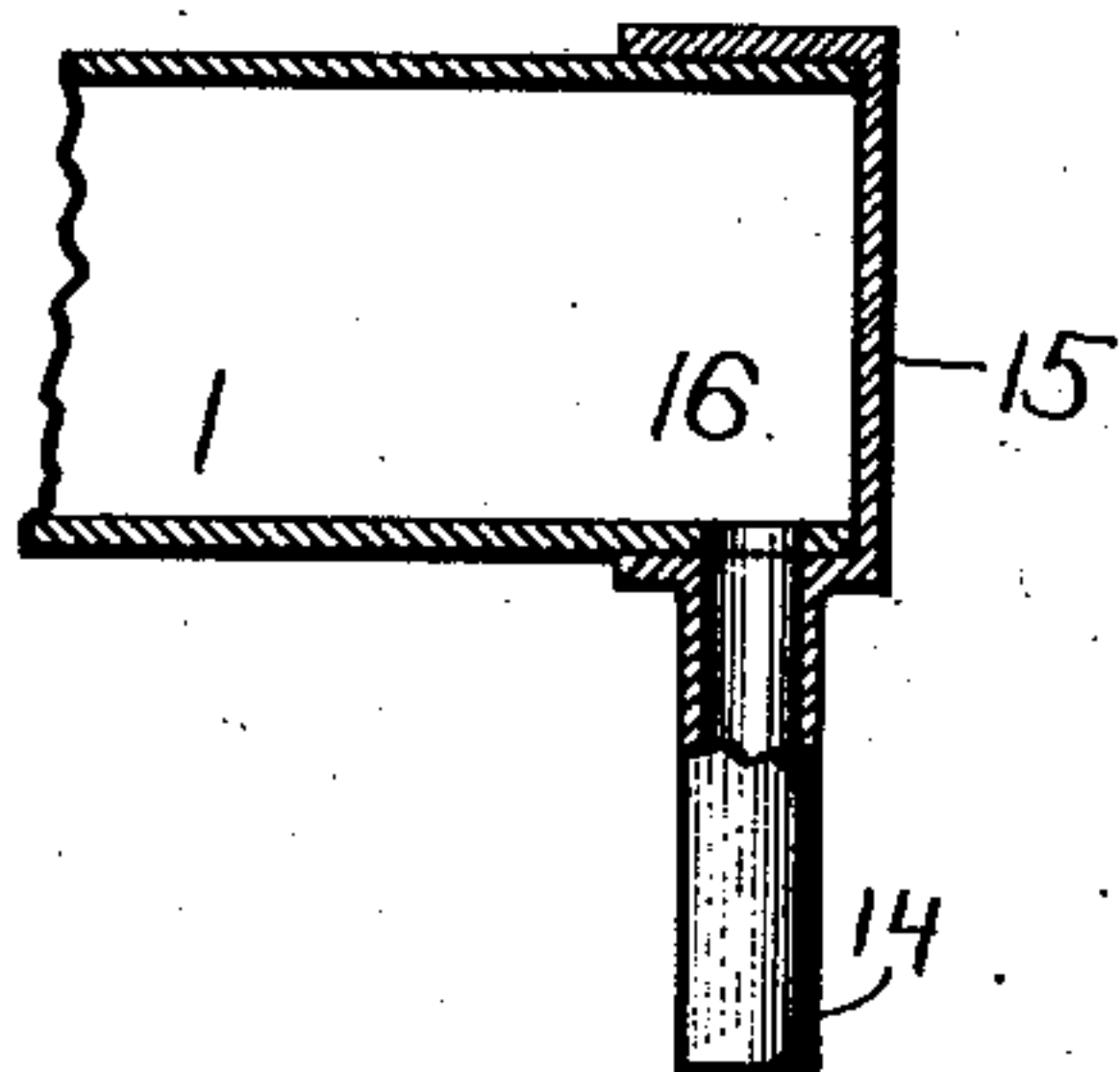


Fig. 3

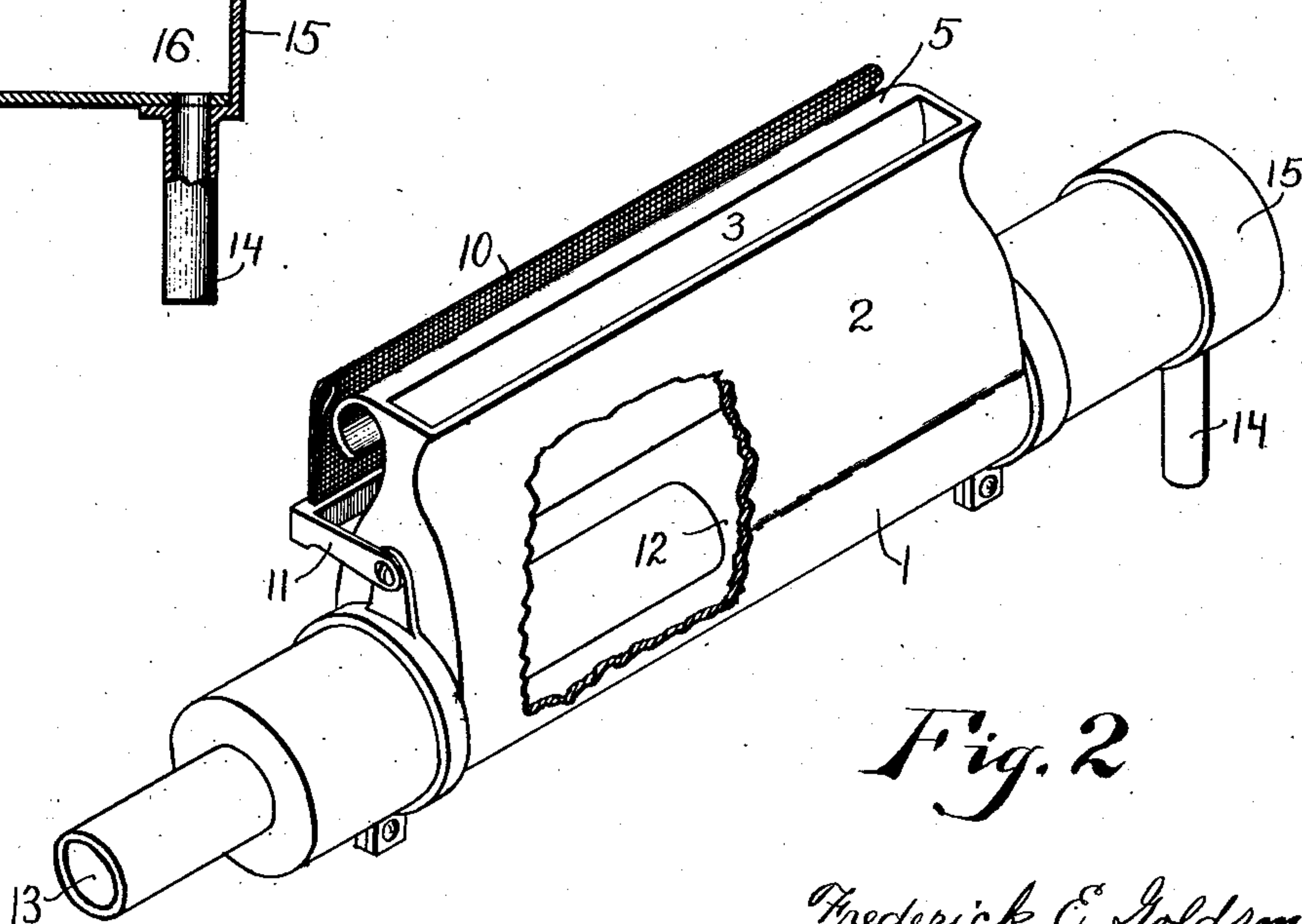


Fig. 2

Witnesses:
 Elmer R. Shipley.
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UNITED STATES PATENT OFFICE.

FREDERICK E. GOLDSMITH, OF MIDDLETOWN, OHIO, ASSIGNOR TO THE CERAMIC MACHINERY COMPANY, OF HAMILTON, OHIO.

APPARATUS FOR COATING.

973,649.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FREDERICK E. GOLDSMITH, a citizen of the United States, and a resident of Middletown, in the county of Butler and State of Ohio, have invented a new and useful Improvement in Apparatus for Coating, of which the following is a specification.

The invention relates to coating machines and processes for coating.

The object of the invention is to apply to articles a uniform layer, or layers, of coating with great facility, speed and cheapness.

The invention is peculiarly adapted for coating ceramics in the biscuit.

Figure 1 is a diagrammatic section of instrumentalities through which the invention may be carried out. Fig. 2 is a schematic perspective of one form of the invention. Fig. 3 is a longitudinal detail section hereinafter referred to.

In the drawings, 1 typifies any carrying conduit.

2 are lips formed on the upper side of the conduit, at a point where it is desired to apply the coating, through which it is caused to flow upwardly.

3 is the mouth formed by the lips 2 and end walls 4.

5 is a ledge formed at one side of the mouth 3 and serving to induce the coating flowing upwardly through the mouth to run over the ledge and fall downwardly.

6 is a receptacle for catching the coating flowing through the mouth 3.

7 is an incoming, and 8 an outgoing conveyor belt. 9 are rolls supporting the belts in the neighborhood of the coating mouth 3.

10 is a bead breaker mounted adjacent to the ledge 5. 11 are means for adjustably supporting the bead breaker with respect to height and distance from the coating mouth or ledge.

12 typifies a feeding orifice for the coating composition into the conduit 1, and 13, a feed pipe therefor.

Means are provided for fluming away a portion of the coating supplied to secure more efficient results. In such cases 14 may represent a flume pipe terminating in a rotary cap 15, which cap is caused to register with a discharge opening 16 in conduit 1. By oscillating the cap 15 the amount of discharge may be regulated, or cut off.

The mouth 3 is preferably bell-shaped in cross section and the ledge 5 curved downwardly from one side thereof. Other forms may be given the mouth and ledge. The latter may be formed upon opposite sides of the mouth.

The bead breaker 10 is preferably co-extensive with the length of the mouth. Excellent results are secured by making it pervious, and in the present instance, a wire gauze has been employed, doubled upon itself at the upper end. The bead breaker may, however, be impervious and of any form suitable for the purpose. In its pervious form it absorbs well the excess coating material which may be upon articles coated.

Coating material is caused to flow upwardly through the mouth 3 from either a force feed such as a fountain at a higher level, or a pump, or the like. By admitting the coating into the conduit 1 longitudinally thereof at 12 and intermediate of its length, the volume of the supply at the mouth is kept substantially constant. A further provision for aiding the uniformly constant supply is the regulating flume pipe 14. These provisions prevent unequal local reacting pressures being formed in portions of the conduit and approaches to the mouth which would cause an irregular flow of coating at the coating zone.

The article to be coated, as 17, is fed across the coating mouth in the direction of the arrows. The line of the feed supports is above the coating mouth. The coating issuing from the mouth comes into effective contact with the lower face of the article 17 as it is fed across the mouth, and is thereby evenly coated. As the article leaves the coating zone the end of the same is likely to carry along with it a bead of excess coating. This bead, when formed, is broken and removed by the bead breaker 10 coming in contact with the bead and removing the same. The article is therefore uniformly coated throughout for subsequent glazing, if the article be ceramic biscuit. The bead breaker is adjustably set, among other things, for different coatings. It may in some instances be dispensed with. The relation between the heights of the coating mouth and the line of feed may be adjustably regulated. Various speeds may be

given the feed in accordance with working conditions. By the line of feed is meant a plane coincident with the face of the object being coated.

5 What I claim is:

1. The combination of a movable feed support, a discharge conduit opening laterally upon said support, means for preventing contact of the object with the conduit and
10 means for preventing the flow of coating through the discharge conduit beyond a point substantially coincident with the line of the moving support.

2. In a coating machine, the combination
15 of an upwardly projecting orifice, means for preventing the flow of coating therethrough substantially beyond the plane of the object-support, means for preventing contact of the object with the conduit and an object-
20 support upon opposite sides of the orifice located above the mouth of the same.

3. In a coating machine, the combination of an upwardly projecting orifice, means for preventing the flow of coating therethrough,
25 substantially beyond the plane of the object support, means for preventing contact of the object with the conduit and a traveling object-support upon opposite sides of the orifice located above the mouth of the same, and
30 serving to carry objects across the coating orifice so that they are coated on their lower side only.

4. The combination of a feed support, a conduit discharging into the line of feed,
35 and stationary means for removing superfluous coating deposited on objects carried by said feed support.

5. The combination of a feed support, a conduit discharging into the line of feed,
40 and adjustable means for removing excess coating deposited on objects carried by said feed support.

6. A coating device comprising a free coating orifice, means for passing objects to
45 be coated across and substantially in the plane of said orifice, means for supplying said orifice with coating medium, means for preventing contact of the object with the conduit, and means for preventing its flow
50 beyond said plane.

7. A coating device comprising a coating orifice having a rolled ledge, means for passing objects to be coated across said orifice, and means for supplying said orifice with
55 coating medium.

8. A coating device comprising a coating orifice, means for preventing contact of the object with said orifice, means for passing objects to be coated across said orifice, means
60 for supplying said orifice with coating medium, and a fixed device for removing superfluous coating from the objects.

9. A coating device comprising a coating orifice having a rolled ledge, means for passing
65 ing objects to be coated across said orifice,

means for supplying said orifice with coating medium, and a device for removing superfluous coating from the objects.

10. The combination of a coating receiver, an upwardly extending orifice, means for
70 preventing contact of the object with said orifice, a coating supply and a bead breaker posterior to said orifice with respect to the direction of movement of objects to be coated.
75

11. The combination of a coating receiver, an upwardly extending orifice, a rolled ledge thereon, a coating supply, a bead breaker posterior to said orifice with respect to the
80 direction of movement of objects to be coated.

12. The combination of a coating receiver, an upwardly extending orifice, means for preventing contact of the object with said orifice, a conveyer for carrying objects over
85 said orifice, and a bead breaker posterior to said orifice with respect to the direction of movement of objects to be coated.

13. The combination of a coating receiver, an upwardly extending orifice, a rolled ledge
90 thereon, a conveyer for carrying objects over said orifice, and a bead breaker posterior to said orifice with respect to the direction of movement of objects to be coated.

14. The combination of a double belt conveyer having a space between the belts, and a free coating orifice discharging approximately in the plane of feed of said conveyer.
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15. The combination of a conveyer for delivering objects to be coated, another conveyer for removing same somewhat removed from the first, and a free coating aperture discharging approximately in the plane of said conveyers and means for preventing contact
100 of the object with the coating aperture.
105

16. The combination of a conveyer for delivering objects to be coated, another conveyer for removing same somewhat removed from the first, a free coating aperture discharging approximately in the plane of said
110 conveyers, and a rolled ledge on said aperture for inducing discharge of coating material in one direction.

17. The combination of a conveyer for delivering objects to be coated, another conveyer for removing same somewhat removed from the first, a free coating aperture discharging approximately in the plane of said conveyers, means for preventing the contact
115 of the object with the coating aperture and a device for removing surplus coating.
120

18. The combination of a conveyer for delivering objects to be coated, another conveyer for removing same somewhat removed from the first, a free coating aperture discharging approximately in the plane of
125 said conveyers, a rolled ledge on said aperture for inducing discharge of coating material in one direction, and a device for removing surplus coating.
130

19. The combination of an elongated chamber, an extension of said chamber having a coating orifice, a conveyer for carrying objects to be coated over said orifice, and a bead breaker posterior to said orifice.

20. The combination of an elongated chamber, an extension of said chamber having a coating orifice, a rolled ledge on said orifice, and a conveyer for carrying objects to be coated over said orifice.

21. The combination of an elongated chamber, an extension of said chamber having a coating orifice, a rolled ledge on said orifice, a conveyer for carrying objects to be coated over said orifice, and a bead breaker posterior to said orifice.

22. The combination of an elongated chamber, a supply conduit, an extension of said chamber having a coating orifice, a conveyer for carrying objects to be coated over said orifice, and a bead breaker posterior to said orifice.

23. The combination of an elongated chamber, a supply conduit, an extension of said chamber having a coating orifice, a rolled ledge on said orifice, and a conveyer for carrying objects to be coated over said orifice.

24. The combination of an elongated chamber, a supply conduit, an extension of said chamber having a coating orifice, a rolled ledge on said orifice, a conveyer for carrying objects to be coated over said orifice, and a bead breaker posterior to said orifice.

25. The combination of an elongated chamber, a supply conduit terminating substantially centrally in said chamber, an extension of said chamber having a coating orifice, means for preventing contact of the object with said orifice, and a conveyer for carrying objects to be coated over said orifice.

26. The combination of an elongated chamber, a supply conduit terminating substantially centrally in said chamber, an extension of said chamber having a coating orifice, a rolled ledge on said orifice, and a conveyer for carrying objects to be coated over said orifice.

27. The combination of an elongated chamber, a supply conduit terminating substantially centrally in said chamber, an extension of said chamber having a coating orifice, means for preventing contact of the object with said orifice, a conveyer for carrying objects to be coated over said orifice, and a bead breaker posterior to said orifice.

28. The combination of an elongated

chamber, a supply conduit terminating substantially centrally in said chamber, an extension of said chamber having a coating orifice, a rolled ledge on said orifice, a conveyer for carrying objects to be coated over said orifice, and a bead breaker posterior to said orifice.

29. In a machine for coating, a chamber, a coating orifice therein, means for preventing contact of the object with the coating orifices and means for circulating coating material through the chamber and supplying it to the orifice comprising a supply conduit communicating with the chamber, and a discharge vent leading from the chamber.

30. In a machine for coating, a chamber, a coating orifice therein, means for preventing contact of the object with the coating orifices and means for circulating coating material through the chamber and supplying it to the orifice comprising a supply conduit communicating with the chamber and a discharge vent leading from the chamber adjustable so as to regulate the amount of coating material passing through the chamber without issuing from the coating orifice.

31. In a machine for coating, a chamber having a coating orifice, means for preventing contact of the object with the coating orifice and means for circulating coating material through the chamber and orifice comprising a supply conduit communicating with the chamber, a discharge opening leading from the chamber and carrying off a part of the material without its passing through the orifice, and a trough beneath the chamber for catching coating material flowing out of the orifice.

32. A coating device comprising a coating orifice, means for passing objects to be coated across the orifice substantially in the same plane, and means adjacent to the orifice for removing superfluous coating from the objects.

33. In a tile coating machine, an upwardly projecting spout, means for continuously flowing the liquid coating material through the spout, and endless carriers for passing the tile over the mouth of the spout with their coat receiving faces in close proximity thereto.

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

FREDERICK E. GOLDSMITH.

Witnesses:

JAMES W. SEE,
JAMES FITTON.