Jan. 10, 1956 E. A. AXELSSON 2,730,608

CUP HEATERS

Filed March 26, 1954 2 Sheets-Sheet 1

Fig.1

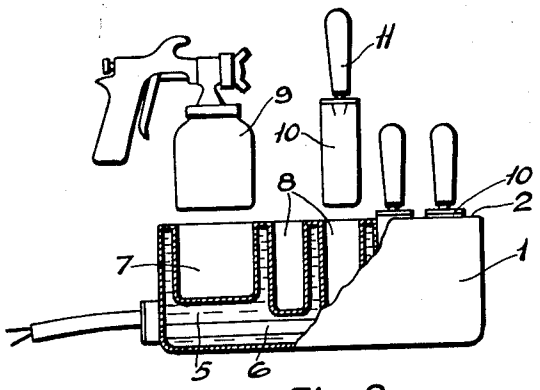


Fig.2

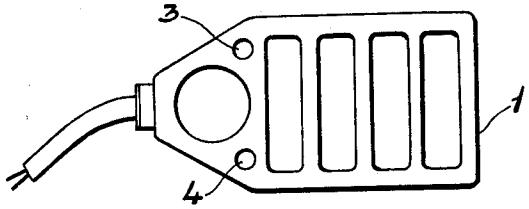


Fig.3

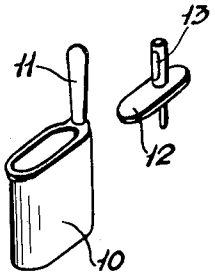
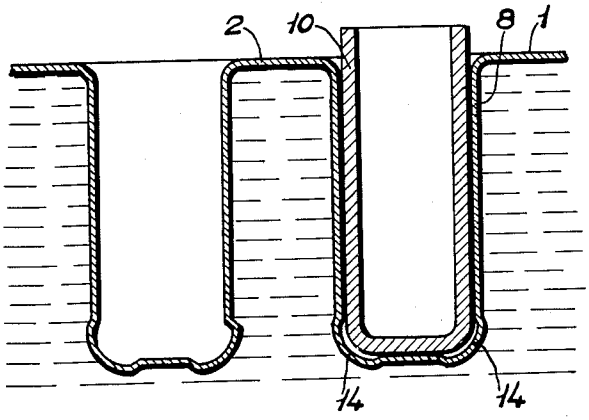


Fig.4



Jan. 10, 1956 E. A. AXELSSON 2,730,608

CUP HEATERS

Filed March 26, 1954 2 Sheets-Sheet 2

Fig.5

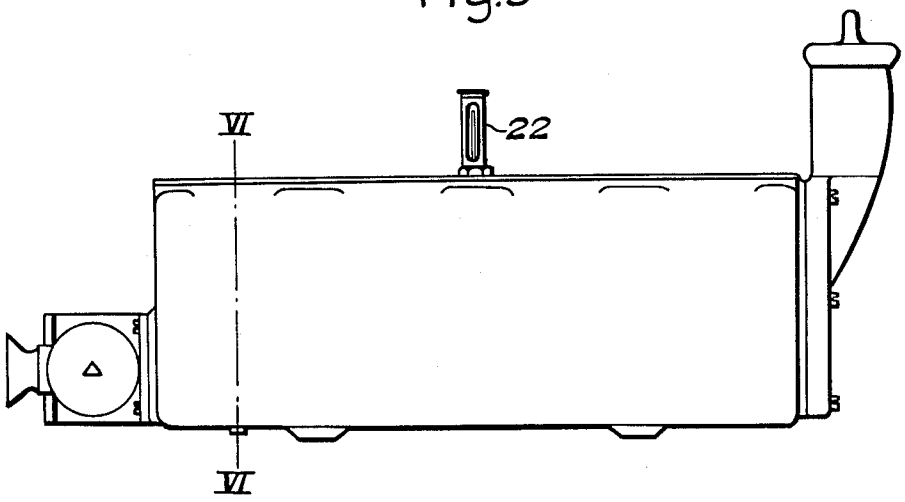
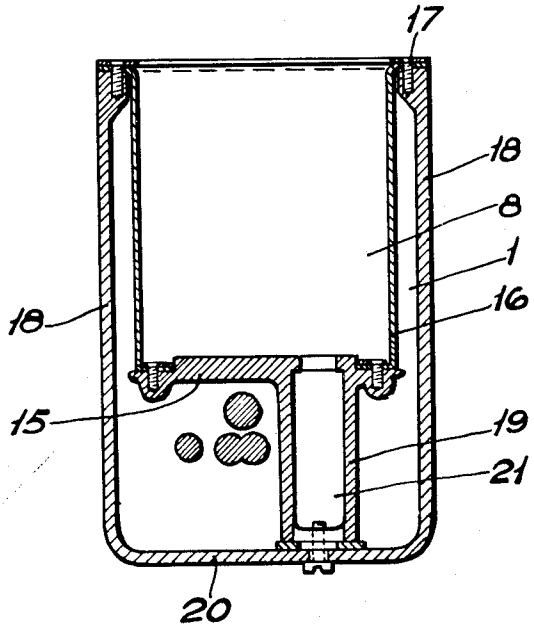


Fig.6



United States Patent Office

2,730,608

Patented Jan. 10, 1956

2,730,608

CUP HEATERS

Eskil A. Axelsson, Stockholm, Sweden

Application March 26, 1954, Serial No. 418,963

Claims priority, application Sweden March 31, 1953

4 Claims. (Cl. 219—38)

The present invention relates to an apparatus for heating a liquid, for example paint, containing receptacles, or to maintaining such receptacles at a certain temperature.

Spray painting with hot paints in industrial painting and the great advantages caused thereby, inter alia due to the fact that the right spray viscosity of the paint is obtained by heat instead of adding solvents, have been known for a long time. Such a heating is usually carried out by supplying paint from large containers through hoses to the spray gun, said paint having first passed through a heating device. When hot spraying of smaller paint quantities from paint containers is concerned, directly connected to the spray gun, or in such a case when the colour of the paints often varies, there has hitherto been no apparatus in existence which simultaneously fills the demands for safety with regard to inflammable paints and which heats without the heat transmitting surfaces being too intensely heated.

So-called cup heaters, when the paint cups are directly heated in electrically heated water baths are in fact earlier known, but these cup heaters have the disadvantage that steam from the water bath condense in the paint causing precipitations. Furthermore a paint cup must be dried when taken out of a water bath which involves extra work, and besides the paint cup must be nearly full of paint when it is immersed into the water bath, as otherwise it will float, and even if the cup is entirely full the level of the bath must be considerably lower than the level of the paint in order to prevent the cup from floating. Due to this it will take longer time to heat the paint. As far as hot spraying is concerned it is very important to be able easily to control that the paint has the right temperature. Consideration has been taken to this in this description.

In the cup heater hereinafter described the difficulties mentioned have been eliminated by immersing heating boxes which fit to the paint cups specially constructed for heat transmission, into a thermostat-controlled heating bath completely covered at the upper side.

According to the invention the apparatus comprises a tank **1** of sheet-iron, synthetical resin, plastic or the like, filled with a liquid and provided with a heating element, said tank being also provided with pockets substantially formed after the outlines of the containers, and said containers can be inserted into the pockets with a minimum of friction.

The invention is illustrated by an embodiment in the annexed drawing in which,

Fig. 1 is a side view partly in section of an apparatus according to the invention, the containers being partially inserted.

Fig. 2 is a corresponding plan view without containers.

Fig. 3 is a perspective view of a container with lid.

Fig. 4 is a detail section on a larger scale.

Fig. 5 is a side view of another embodiment, and

Fig. 6 is a section along the line VI—VI in Fig. 5.

Referring now to the drawings **1** designates a closed tank of sheet-iron which at the upper side **2** is provided with an opening **3** for filling and an air valve **4**, said tank being filled with a liquid **5** into which an electric heating element **6** is introduced. From the upper side a number of pockets **7**, **8** are immersed which are formed substantially so as to fit the outlines of a number of containers **9**, **10**, in the example shown a spray gun container **9** and four paint cups **10**. The paint cups may be of an elastic material. They are provided with an insulating handle **11** and a lid **12** into which a thermometer **13** is introduced.

In order to prevent the containers from being clamped owing to the thermal expansion of the walls of the pockets **8** these bulge **14** at the lower corners, so that they become resilient.

In the embodiment shown in Figs. 5 and 6 the container **1** and the bottom **15** of the pockets **8** are of metal or some other solid material, whereas the side walls **16** of the pockets **8** are made of rubber or a similar material. The side walls **16** are at the top tightly attached to the edges of holes **17** in the paper side of the container **1**, so that the walls will be located at some distance from the side walls **18** of the container **1**, and at the bottom tightly attached to the bottom **15** of the pockets **8**, which bottom **15** by means of a downwardly directed projection **19** is tightly attached to the bottom **20** of the container **1**. A channel **21** for draining the pocket **8** runs through the bottom **15** of the pockets **8**, the projection **19** and the bottom **20** of the container **1**.

A thermometer **22** is provided in the upper side of the container.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. Apparatus such as claimed in claim 4 in which the walls of the pockets are made of a plastic material.

2. Apparatus such as claimed in claim 1 in which the bottoms of the pockets are made of a solid plate supported on said closed tank.

3. Apparatus as claimed in claim 2 in which a draining channel is provided through a bottom of the pockets and said closed tank.

4. Apparatus for heating substances in vessels comprising a closed tank containing a liquid, a heating element for heating the liquid and pockets provided in said closed tank and being formed to fit the shapes of the vessels so as to receive the vessels with a minimum of friction, said pockets having walls which are resilient.

References Cited in the file of this patent

UNITED STATES PATENTS

1,695,008	Christensen	Dec. 11, 1928
2,164,282	Morris	June 27, 1939
2,187,196	Douglass	Jan. 16, 1940
2,269,874	Henschel	Jan. 13, 1942
2,428,996	Schworm, Jr.	Oct. 14, 1947
2,602,876	Heinen	July 8, 1952