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ELECTRICALLY HEATED APPARATUS

2,913,565

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Fig. 1

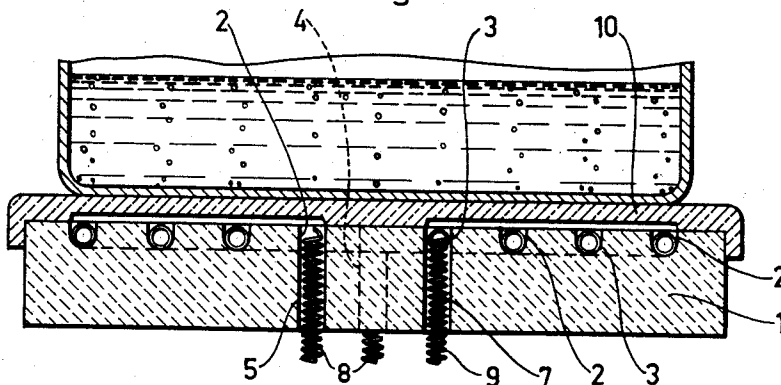
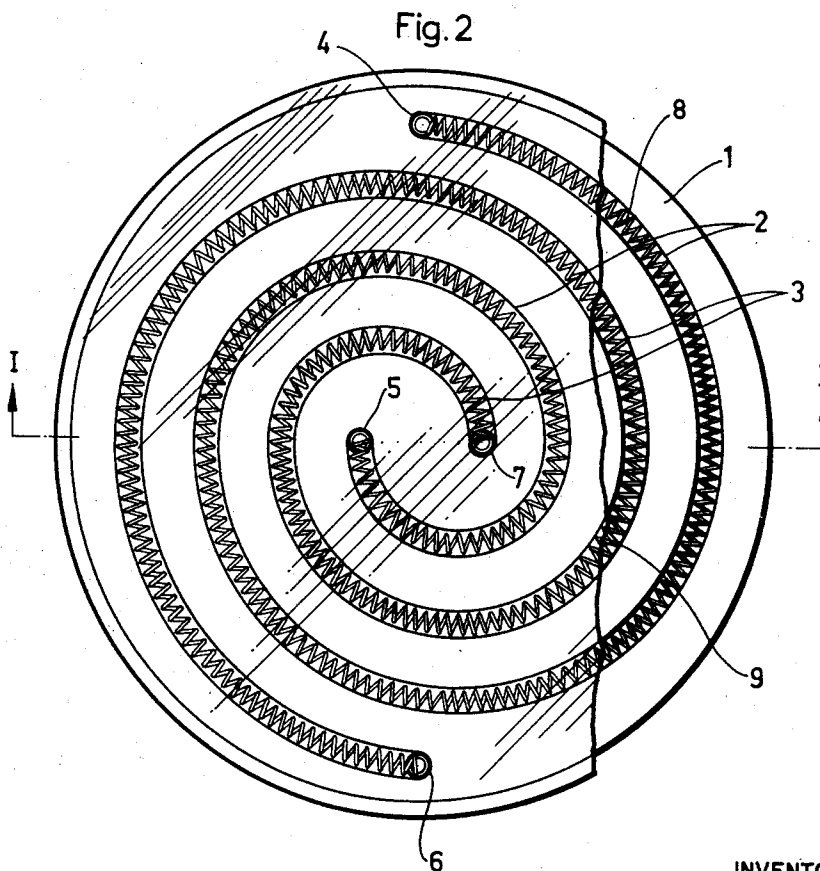


Fig. 2



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ELECTRICALLY HEATED APPARATUS

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Claims priority, application Sweden December 30, 1955

3 Claims. (Cl. 219—37)

The present invention relates to the field of electrically heated apparatus the source of heat of which consists of a resistance wire provided beneath a cover to which wire the atmosphere has access.

Such apparatus may be in the form of a hot plate. In the art there has been discussed the idea of obtaining a quicker heating of the contents of, for instance, a boiling vessel put on the plate and thus a better efficiency by substituting for the ordinary non-transparent cover for the resistance wire a cover made of transparent fire-proof material, such as glass, whereby the thermal operation of the hot plate should be improved due thereto that the heating energy is transferred to the object to be heated by radiation. Further, in a hot plate of this design the resistance wire is visible and, when glowing, this is a convenient indication that the current is switched on.

Hot plates made on this principle have, however, not hitherto proved successful because there is a tendency for the glass to become discoloured.

Applicant has subjected this question to thorough investigations in the laboratory and has then found that the discolouring effect is highly dependent on the selection of material in the resistance wire. Resistance materials of the type constituted by nickel and chromium have been to be unsuitable for the purpose in view, because dark-coloured oxides are formed on the wires when heating them under the admission of air and it is just such oxides which have a tendency to discolour the glass. Due to this discolouring effect the expected advantages of the desired radiation of heat will not be obtained.

Surprisingly enough the inventor has now found in his tests that such resistance alloys which include aluminium do not cause any detrimental discolouring of the glass. The cause is that on the surface of the wires there is formed a light-coloured adhering protecting oxide film substantially constituted by Al_2O_3 .

It has further been found that the content of aluminium in the alloy should be at least 2% by weight to produce this effect. On the other hand, the aluminium content should not exceed 10%.

Several aluminous resistance alloys may be advantageously used which, in addition to Al, consist of Fe, Cr and, if desired, Co. Such alloys are known per se and

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examples thereof are disclosed, for instance, in the United States Patent No. 2,580,171.

The invention will now be further described with reference to the accompanying drawing on which:

Fig. 1 is a vertical cross section on line I—I in Fig. 2 of an embodiment of a hot plate, and

Fig. 2 is a partially cut away plan view of the apparatus shown in Fig. 1.

In an insulating body 1, for instance, of ceramic fire proof material, there are two helical grooves 2 and 3. At the respective ends thereof are vertical holes 4, 5 and 6, 7. In this instance resistance wires 8 and 9 are screwshaped spirals and inserted into the grooves 2 and 3. Their terminals protrude through the holes 4 to 7 as shown. The top is covered by a fire proof glass cover 10. The holes 4 to 7 have for their purpose not only to accommodate the terminals of the spirals 8 and 9 but also to operate as air vents wherethrough air is admitted to the spirals 8 and 9.

What is claimed is:

1. In an electric heating plate for an oven range, the combination comprising an electrically insulating, fire-proof, transparent cover, and an electrical resistance heating element disposed in underlying spaced relation to said cover so as to be exposed to atmosphere for the circulation of air freely substantially all around its periphery, said element being formed of an alloy having an aluminum content of from 2% to 10% by weight.

2. In an electric heating plate for an oven range, the combination comprising an electrically insulating, fire-proof, transparent cover, and an electrical resistance heating element disposed in underlying spaced relation to said cover so as to be exposed to atmosphere for the circulation of air freely substantially all around its periphery, said element being formed of an alloy consisting essentially of aluminum, iron and chromium.

3. In an electric heating plate for an oven range, the combination comprising an electrically insulating, fire-proof, transparent cover, and an electrical resistance heating element disposed in underlying spaced relation to said cover so as to be exposed to atmosphere for the circulation of air freely substantially all around its periphery, said element being formed of an alloy consisting essentially of aluminum, iron and chromium and having an aluminum content of from 2% to 10% by weight.

References Cited in the file of this patent

UNITED STATES PATENTS

2,179,934	Jones	Nov. 14, 1939
2,495,788	Trist	Jan. 31, 1950
2,580,171	Hagglund et al.	Dec. 25, 1951
2,770,704	Razlag	Nov. 13, 1956

FOREIGN PATENTS

269,744	Switzerland	Oct. 16, 1950
739,564	Great Britain	Nov. 2, 1955
857,086	Great Britain	Aug. 24, 1940