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Rausch et al.

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[54] **ASSEMBLY METHOD FOR THE LINING OF HOT TOPS AND THE LIKE IN FOUNDRY PRACTICE**

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Related U.S. Application Data

[63] Continuation of Ser. No. 819,391, April 25, 1969, abandoned.

[52] **U.S. Cl.** **164/6**, 29/155, 29/525, 220/80

[51] **Int. Cl.** **B22c 7/00**

[58] **Field of Search** 29/155, 525, 433; 164/6, 137; 249/201, 197; 266/43; 220/80

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[57] **ABSTRACT**

Hot top tiles are secured together by the use of H-section metal strips, the edges of the tiles being secured in the openings of the H-section.

2 Claims, 2 Drawing Figures

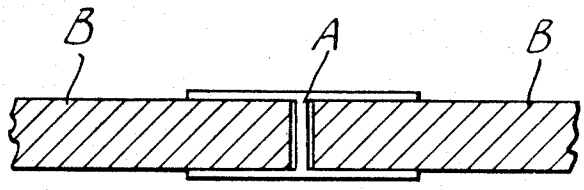


FIG. 1

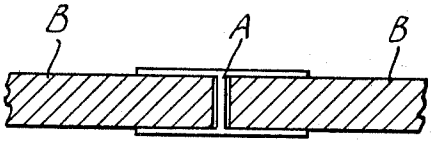
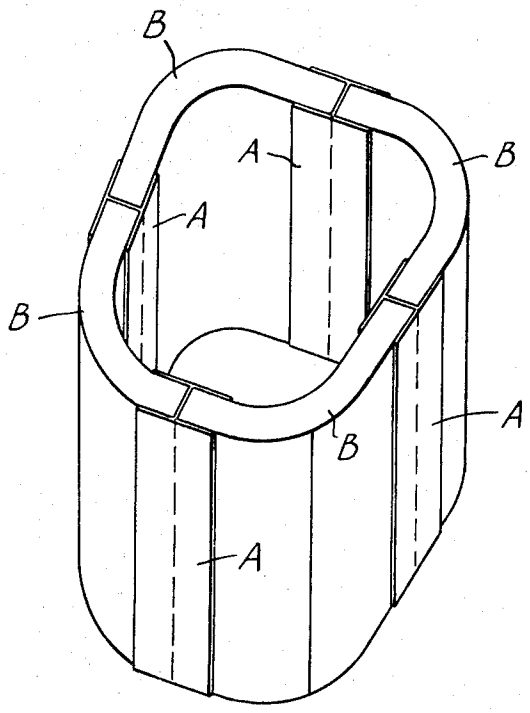


FIG. 2



ASSEMBLY METHOD FOR THE LINING OF HOT TOPS AND THE LIKE IN FOUNDRY PRACTICE

This application is a continuation of application Ser. No. 819,391, filed Apr. 25, 1969, now abandoned, entitled "Assembly Method For The Lining Of Hot Tops And The Like In Foundry Practice."

This invention relates to an assembly method for pre-formed slab elements of linings used in the construction of hot-tops, feeder heads and the like used in the production of metal ingots and castings.

The invention is of particular value in the production of metal ingots, particularly steel ingots and will therefore be described, by way of illustration, with particular reference to that use.

It is common practice in the production of metal ingots to provide the head of the ingot mould, or a hot top affixed thereto, with a lining of a material which will act as a barrier or hindrance to the loss of heat from the head metal, i.e. that part of the metal which is located at the head of the ingot mould or extending into an applied hot-top construction. The purpose of such lining is to ensure that the head metal remains molten long enough to provide a feed of molten metal to the body of the ingot to compensate for the shrinkage due to cooling and solidification of the metal of the body of the ingot. If such a step is not taken there is a tendency to the formation of ingots having cracks or fissures resultant on such shrinkage.

The lining may be formed of a heat-insulating material or of a composition which contains ingredients which, when fired by the hot molten metal, inter react exothermically so that the composition, in use, will generate heat, e.g. an aluminothermic composition may be employed. In recent years, however, there have come extensively into use for the said purpose slabs of compositions which comprise a proportion of an organic fibrous material, preferably paper pulp, a proportion of particulate refractory material, e.g. sand, and a proportion of a binding agent e.g. a phenol-formaldehyde, ureaformaldehyde or furane resin, or a silicate binder.

Specific compositions of the foregoing type are for example those having the said ingredients in the following proportions by weight:

organic fibrous material	2 to 20 parts
binder	4 to 10 parts
particulate refractory	to make 100 parts

Such compositions may also contain a proportion of fibrous refractory material such as asbestos, slag wool or the like.

Linings of any of the compositions as referred to above may be produced in situ by appropriately shaping a body of the composition to fit the contour of the ingot mould head or hot top. However it is generally more convenient to provide the composition in the form of pre-formed slabs of different sizes so that the user may select those of suitable size and build up the required lining.

It frequently arises, however, that the user may not have in stock slabs of exactly the dimensions he requires and in this case it may be necessary to construct a larger slab from two or more smaller slabs. In any event, unless the slab is in the form of a pre-formed sleeve constituting a complete lining, it is necessary to provide means for connecting slabs together to build up the lining.

According to the present invention there is provided a method of assembling slabs of heat-insulating or exothermic material in edge abutting relationship in the production of a lining for the head of an ingot mould or hot top to be used for the production of metal castings or ingots, which comprises providing between the abutting edges of the said slabs a strip of metal of generally H-shaped section and securing the edges to be abutted in the openings of the H-section.

The method has important advantages in terms of its simplicity of use and has the additional advantage that the chilling effect of the H-shaped section, by cooling the molten metal at the area of the joint, prevents penetration of molten metal at the joint and so prevents finning of the ingot metal at the areas of the joints.

The method of the invention is illustrated in the accompanying drawings in which:

FIG. 1 illustrates the method of assembly in section, and

FIG. 2 illustrates in perspective a lining constructed of four shaped slabs assembled together by the method of the invention.

In these drawings the H-shaped metal section is indicated by the letter A and the slabs by the letter B. Although not illustrated the edges of the H-section which lie against the slab may if desired be provided with a turned-in lip so that the lips bite into the slab and help to secure the assembly in rigidly locked condition.

We claim as our invention:

1. In the process of producing ingots and metal castings wherein linings are provided for the heads of ingot moulds or hot tops, the steps of (1) forming a lining by assembling slabs of material in edge abutting relationship by providing between abutting edges of said slabs a strip of metal of generally H-shaped section and securing the edges to be abutted in the openings of the H-shaped section and (2) inserting said so assembled lining into the heads of said ingot moulds or hot tops.

2. In the process of claim **1**, the use of strips of metal in which the edges of the H-section which in use lie against the slab are provided with a turned-in lip.

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