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BOTTOM PLATES FOR MOULDS INTENDED FOR THE MANUFACTURE OF CELLULAR CONCRETE AND OTHER MATERIALS IN THE MANUFACTURE OF WHICH GREAT DIFFERENCES IN TEMPERATURE APPEAR BETWEEN THE CONTENT OF THE MOULDS AND THE SURROUNDING MEDIUM
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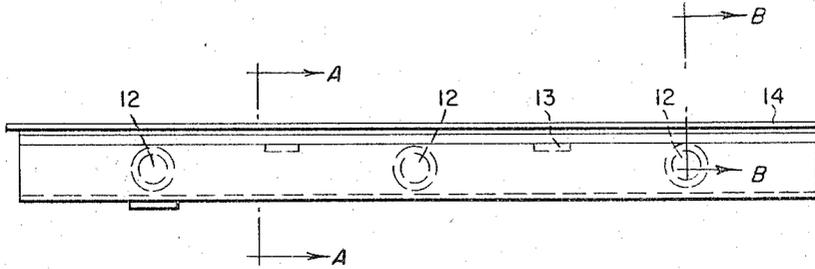


FIG. 1

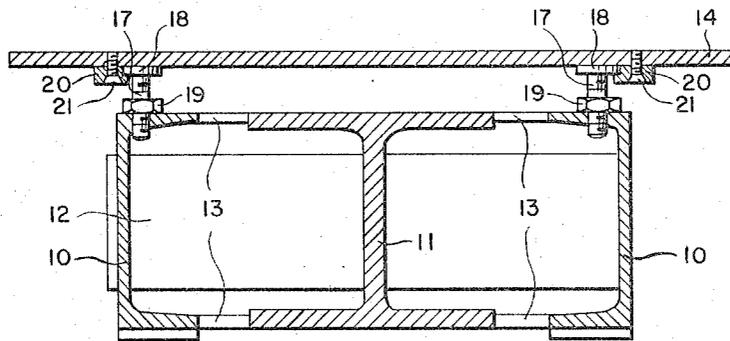


FIG. 2

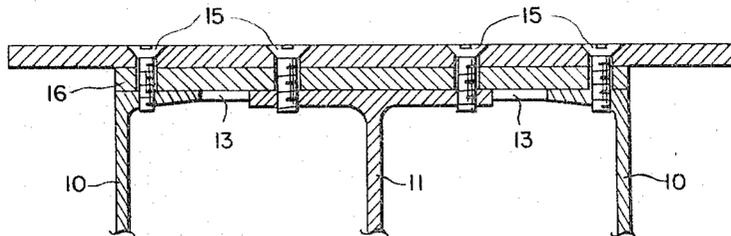


FIG. 3

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This invention relates to bottom plates for molds intended for the manufacture of cellular concrete and other materials in the manufacture of which considerable differences in temperature occur between the contents of the mold and the surrounding medium.

Cellular concrete is produced as follows: A mixture of lime and silicate materials, to which is added water and some gas-producing substance, such as aluminum powder, is cast into moulds measuring about 6 m. in length and between 50 and 60 cm. in height. Immediately after the casting a development of gas starts in the mass giving the intended porous structure to the same. At the same time a chemical binding commences between the silicate material and the lime. When the lime partly consists of unslaked lime great quantities of heat arise during the porosity-forming process as well as during the subsequent setting. The mass may sometimes reach a temperature of about 90° C. After being divided into building units of the dimensions required it is subject to steamcuring in an autoclave at a temperature of about 180° C.

Up to now the bottom of the mold has been rigid and consisted of a framework with a bottom plate and an under plate welded to it. Such a mold, however, has some drawbacks that are likely to disturb the manufacturing process.

During the porosity-forming and setting processes the mass, as already mentioned, will reach a temperature of about 90° C. while the surrounding air has a temperature of about 20° C. The difference of temperature between the bottom plate of the mold and its under plate, consequently, becomes 70° C. which means a greater longitudinal expansion of the bottom plate than of the under plate. As a result the mold bottom does not remain plane and takes the shape of a bow bent upwards.

During the first stage of steam-curing the mold is surrounded by steam of a temperature that by far surpasses the one of the mass that rests on the bottom of the mold. The under plate of the mold bottom then will expand more than its bottom plate, a bow being formed now too, but this time pointing downwards and also somewhat more curved as a consequence of the cooperation of the weight of the mass. If the molds are long, the resulting curve can in both the related cases cause formation of cracks in the mass that has not yet finally set.

The present invention relates to a type of mold bottom where this disadvantage has been completely eliminated. The mold bottom consists, according to the invention, of a frame on which bottom plate is attached, the bottom plate being freely extensible in the longitudinal direction.

The bottom plate may be attached to the frame by means of a spacing device or devices and only maintains point contact with the frame.

In an alternative type the bottom plate is fixed in one section perpendicular to its longitudinal direction. It is then fixed in one single section which may divide the length of the mold centrally and which permits free extension of the plate.

The invention is illustrated by way of example in the accompanying drawing.

In the drawing FIG. 1 shows a vertical projection of the mold bottom. For the sake of clarity only one half of the same is shown.

FIG. 2 shows the cross-section of the mold bottom at A—A of FIG. 1.

FIG. 3 shows the cross-section of the mold bottom at B—B where the mold length is divided centrally.

The mold bottom shown in the drawing consists of a frame construction made of two longitudinal channel-section bars 10 and a central longitudinal I-section girder 11. These bars are connected by pipes 12. In order to improve the rigidity of the bottom spacers 13 are welded between the flanges of the bars. The length of the spacers is small compared to that of the mold bottom.

A bottom plate 14 is via a spacing iron bar 16 connected with the frame by means of screws 15 at a single section perpendicular to the longitudinal direction. In the example shown here the plate has been fixed to the central part of the frame and is guided vertically and laterally by a number of supporting devices consisting of spacing screws 17, which are adjustable vertically and have cylindrical heads 18. The screws can be locked in the required position by the locking nuts 19. The heads of the screws engage section irons 20 fixed to the bottom plate by the screws 21. By this arrangement the plate is guided laterally but is freely extensible in the longitudinal direction, which means that the mold bottom when heated or cooled can change its length without bending. Also, this arrangement gives free access of air and steam to the bottom plate, and allows the temperature of the upper as well as of the under side of the frame to become about the same as that of the surrounding medium.

The result is that the frame remains plane independently of differences of temperature between the content of the mold and the surrounding medium. It will be seen that by providing a suitable size of air gap not only good air circulation is obtained but also heat conduction from the bottom plate of the mold is prevented.

In the above construction the bottom plate is fixed to the centre of the frame but it may be fixed for instance at one end of the frame. The essential thing is that the mold bottom is able to withstand any alteration of length caused by heating or cooling, without bending.

Another advantage of the present invention is that it is not necessary to plane the bottom plate which is a rather costly procedure. Instead, it is possible to level it by means of the spacing screws.

For the molds used hitherto it has sometimes proved necessary to plane them after some time of use, as their level surface has been lost because of repeated heatings and coolings. A mold designed according to the present invention can be easily leveled afterwards as mentioned above.

The example of arranging a mold according to the invention that has been given here is to be considered only as one example which in many essential details can be varied without deviating from the essence of the invention.

What I claim is:

1. A mold bottom for molds used in the manufacture of materials in which substantial temperature differences occur between the contents of the mold and the surrounding medium, comprising a frame, a mold bottom plate on said frame, and means attaching said bottom plate to said frame to permit free extension of the bottom plate in the longitudinal direction upon expanding or contracting in accordance with temperature changes, said means comprising spacing means for maintaining an air gap between said bottom plate and said frame while permitting longitudinal extension of said bottom plate.

2. A mold bottom as defined in claim 1 wherein said spacing means make substantially only point contact with said bottom plate.

3. A mold bottom as defined in claim 2 wherein said spacing means comprise screw threaded members which are vertically adjustable in said frame to permit leveling of said bottom plate.

4. A mold bottom for molds used in the manufacture of materials in which substantial temperature differences occur between the contents of the mold and the surrounding medium, comprising a longitudinal frame, a mold bottom plate on said frame, attachment means fixing said bottom plate to said frame in a single lateral section perpendicular to the length of said frame so as to permit free expansional and contractural longitudinal extension of said bottom plate relative to said single section upon changes in temperature, and guiding means extending between said frame and said bottom plate for guiding said bottom plate perpendicularly to its longitudinal direction while permitting said free longitudinal extension.

5. A mold bottom as defined in claim 4 wherein said attachment means and said guide means maintain an air gap space between said bottom plate and said frame, and said guiding means comprises means for permitting selective vertical adjustment between said frame and said bottom plate.

6. A mold bottom for molds used in the manufacture of materials in which substantial temperature differences occur between the contents of the mold and the surrounding medium, comprising a frame, a mold bottom plate mounted on said frame, and means for guiding said bottom plate perpendicularly to the longitudinal direction so as to permit free extension of the bottom plate in the longitudinal direction upon expanding or contracting in

accordance with temperature changes, said means including spacing means for maintaining an air gap between said bottom plate and said frame.

7. A mold bottom as defined in claim 6 comprising means fixing said bottom plate to said frame in a section perpendicular to the length of the frame so as to permit free extension of said bottom plate relative to the fixed section.

8. A mold bottom as defined in claim 6 wherein said spacing means makes substantially only point contact with said bottom plate.

9. A mold bottom as defined in claim 8 wherein said spacing means comprise screw threaded members which are vertically adjustable in said frame to permit leveling of said bottom plate.

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