

Sept. 11, 1962

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3,052,987

METHOD AND MEANS FOR DRYING PLASTER MOLDS

Filed June 1, 1959

Fig. 1

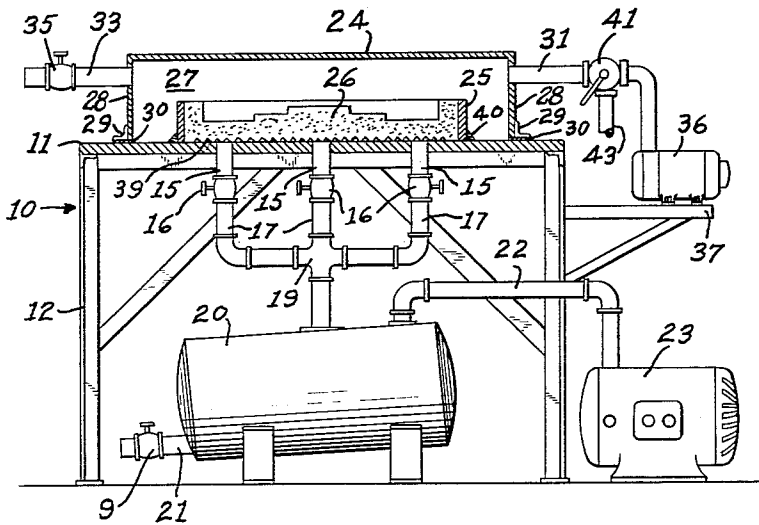
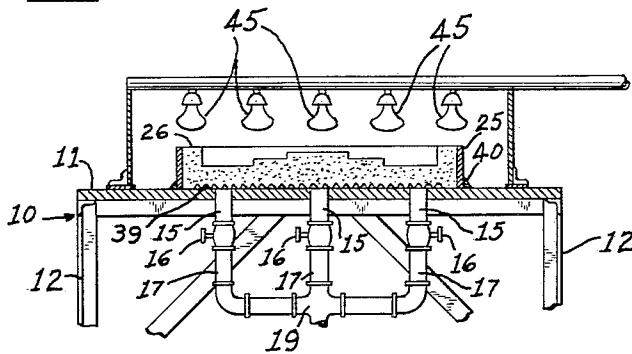


Fig. 2



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**METHOD AND MEANS FOR DRYING
PLASTER MOLDS**

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Filed June 1, 1959, Ser. No. 817,269
2 Claims. (Cl. 34-21)

This invention relates to improvements in methods and apparatus for drying plaster molds.

Heretofore, aluminum match plates, core boxes and pattern castings have commonly been made in plaster molds. In such casting operations, the plaster mold must be completely dry before casting and drying of the mold is attained by placing the mold in an oven and baking the mold therein. This takes from ten to twenty-four hours depending upon the size of the mold which frequently delays the casting operation and greatly increases the cost of this type of molding.

It is, accordingly, an object of the present invention to improve upon the prior processes of drying plaster molds by removing free water from the molds independently of drying of the molds.

A further object of the invention is to provide a novel and improved process for drying plaster molds by pulling a vacuum through the bottom of the mold to remove the free water therefrom, and by collecting and passing the free water to drain.

Still another object of the invention is to improve upon the drying of plaster molds by placing the mold in a sealed chamber and applying air pressure in the chamber to remove the free water from the mold, and in drawing free water from the mold by vacuum.

A still further object of the invention is to provide an improved method of drying plaster molds by scoring the bottom of the mold and placing the scored surface of the mold on a table, surrounding the mold with a sealed chamber and applying air pressure to the chamber to force water from the mold onto the table, and at the same time drawing free water from the bottom of the mold by vacuum.

A still further object of the invention is to improve upon the drying of plaster molds by placing the mold in a sealed chamber and drawing water from the bottom of the mold by vacuum, and at the same time passing pre-heated air into the sealed chamber.

A still further object of the invention is to provide an improved process of drying plaster molds by pulling a vacuum through the bottom of the mold while applying infra-red heat to the face of the mold.

These and other objects of the invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawing wherein:

FIGURE 1 is a diagrammatic view of an apparatus for carrying out the process of the invention; and

FIGURE 2 is a fragmentary diagrammatic view showing a modified form of apparatus for carrying out the process of the invention.

In the embodiment of the invention illustrated in the drawing, I have shown a table 10 having a flat top 11, supported on legs 12.

The flat top 11 of the table 10 has a plurality of vacuum lines or pipes 15, 15 leading therethrough, the number and spacing of said pipes depending on size of molds to be dried. Each vacuum line 15 is connected with a shut-off valve 16. The shut-off valves 16 are connected with pipes or vacuum lines 17 having connection with a common T 19, connected with a collector or accumulator tank 20. The collector tank 20 is shown as being supported in inclined relation with respect to the ground

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and has a drain pipe 21 leading from the low end thereof, for draining water accumulating in said tank under the control of a drain valve 9, which is normally closed during the drying cycle, and is only opened when it is desired to drain accumulated moisture from the collector tank 20, at the end of a drying cycle.

A vacuum pump 23, which may be of a type in which the drive motor for the vacuum pump is self-contained in the pump housing, is connected with the top of the collector tank 20 through a vacuum line 22, to draw a vacuum downwardly through the top 11 of the table 10 through the vacuum lines 15, 15 and 17, 17.

The top 11 of the table 10 is shown as having a hood 24 mounted thereon. The hood 24 may be detachably mounted to the top of the table to accommodate the placing of a flask 25 containing a plaster mold 26 therein, onto the table top in communication with the vacuum lines 15, 15.

As herein shown, the hood 24 is generally rectangular in form and includes parallel end walls 28 and side walls 27, having angles 29 extending thereabout and sealed to the table top by a gasket 30, interposed between the table top and the horizontal legs of the angles 29.

An air inlet line or pipe 31 enters the end wall 28 of the hood 24, while an air outlet pipe 33 leads from the opposite end wall 28. A valve 35 is connected to the outlet pipe 33. The valve 35 may be closed to accommodate air under pressure entering the hood through the air inlet line 31 to be built up within the hood 24. An air compressor 36 is connected with the air inlet line 31 to supply air under pressure to said air line. The compressor 36 may be of a form in which the motor and compressor are contained in the same housing, and is shown as being mounted on a platform 37 extending outwardly from the legs 12 of the table 10.

In carrying out the method of the invention, the bottom surface of the plaster mold 26 may be scored as indicated by reference character 39. The mold with its flask may then be placed on the flat table top 11 of the table over the vacuum lines 15 with the scored bottom of the mold in engagement with the flat table top 11. The flask may then be sealed to the table top by a gasket, indicated generally by reference character 40, or by sealing compound or a like sealing method. The vacuum pump 23 may then be put into operation. At the same time the compressor 36 may be started, to build up air pressure within the hood 24, the valve 35 being closed. This will force free water in the plaster mold toward the bottom of the mold, to be drawn from the bottom of the mold through the vacuum lines 15 into the collector tank 20, to completely remove all moisture from the mold. The valve 41 may then be opened and air in the pressure line 31 may be heated to pass heated air over the mold, to completely dry the mold while free water is removed from the bottom of the mold through the vacuum lines 15.

As shown in FIGURE 1 of the drawings, a valve 41 is placed in the pressure line 31 and has connection with a source of heated air through an air line 43.

The valve 41 may be a three-way valve, which in one position connects the compressor 36 with the pressure line 31 and in another position connects the air line 43, connected with a source of heated air, to the pressure line 31, and disconnects the compressor 36 from said pressure line.

In the form of the invention illustrated in FIGURE 2, the vacuum pump 23, collector tank 20 and vacuum lines 15 have communication with the scored bottom surface of the mold through the top 11 of the table 10. In this form of the invention, the hood 24 has been removed and a bank of infra-red lamps 45 is placed over the mold and free water is removed from the bottom of the mold by vacuum alone. The infra-red lamps 45 extending over

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the top of the mold then apply heat to the mold during removal of free water from the mold until the mold is completely dried.

It may be seen from the foregoing that a simplified and improved method and apparatus has been provided for drying plaster molds in which the drying time is materially reduced over former methods, in that free water is removed from the mold either by vacuum alone, or by pressure acting on one side of the mold and vacuum acting on the opposite side of the mold.

While I have herein shown and described several forms in which my invention may be embodied, it may readily be understood that various variations and modifications in the invention may be attained without departing from the spirit and scope of the novel concepts thereof, as defined by the claims appended hereto.

I claim as my invention:

1. In a method of drying plaster molds in which a table having a flat table surface having a plurality of suction passageways leading therethrough, an open flask open at its top and bottom, a sealing means for sealing the flask to the flat table surface and a hood for placing over the flask and having a pressure passageway leading thereinto are utilized, the steps of placing the flask with the plaster mold therein on the flat table surface over the suction passageways, sealing the outer marginal portion of the flask to the flat table surface, placing the hood over the mold and building up pressure under the hood through the pressure passageway and forcing moisture from the mold onto the flat table surface and at the same time withdrawing the moisture through the suction passageways by vacuum.

2. In a method of drying plaster molds utilizing a table having a flat table surface and having a plurality of suction passageways leading therethrough, an open flask open

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at its top and bottom, sealing means sealing the marginal portions of the flask to the flat table surface, a hood adapted to be placed over the flask and to rest on the flat table surface and having a pressure passageway leading thereinto and means supplying fluid under pressure to said hood, the steps of scoring a plaster mold in the flask on one side thereof, placing the flask and mold on the flat table surface with the scored side thereof abutting the flat table surface, sealing the marginal portions of the flask to the flat table surface, placing the hood over the flask and mold and resting the hood on the flat table surface, forcing fluid under pressure into the hood and building up pressure under the hood and forcing moisture from the mold onto the flat table surface, and at the same time withdrawing moisture from the mold through the suction passageways leading through the flat table surface.

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