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1,588,059

J. SCHUMACHER

AERATING AND MIXING PLASTIC MATERIAL

Filed April 20, 1925

Fig. 1

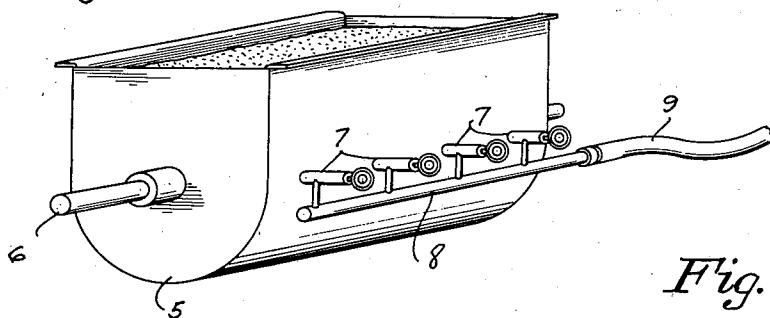


Fig. 2

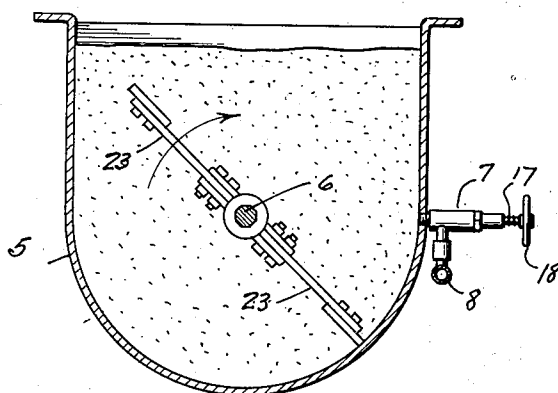


Fig. 3

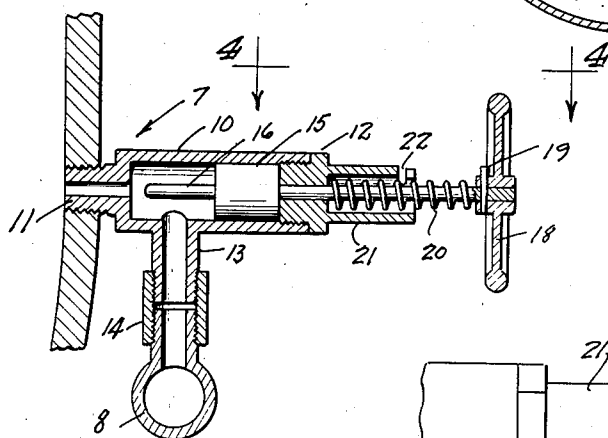
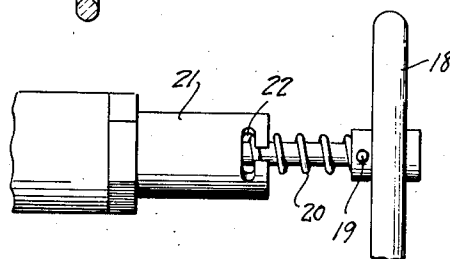


Fig. 4



INVENTOR.

John Schumacher
BY Nestall and Nallace
ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN SCHUMACHER, OF LOS ANGELES, CALIFORNIA.

AERATING AND MIXING PLASTIC MATERIAL.

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This invention relates to a method of treating plastic material, and the embodiment illustrated herein is adapted for mixing the ingredients of gypsum plaster and treating the mix, but not limited to such use.

In the manufacture of wall board, plaster board, plaster lath and like structural elements, it is advantageous to have a cementitious material which is light in weight and provided with air or gas pockets, thereby adding to the heat insulating qualities of the material. This may be effected by introducing air or gaseous particles into the material while the latter is in a plastic state and holding the bubbles of air or gas in the mass until it has set. This provides a porous cementitious body. The air or gas should be uniformly distributed throughout the mass and also preferably should be in minute bubbles. This may be accomplished by the mixer disclosed herein, and wherein air or gas is introduced into a mixing chamber, distributed and beaten into the mass by means of mixing blades or agitators.

These objects together with other objects and corresponding accomplishments may be effected by employing the means illustrated in the accompanying drawing, in which:

Fig. 1 is a perspective view of a mixer; Fig. 2 is a transverse section through the mixer; Fig. 3 is an axial section through one of the air nozzles; and Fig. 4 is a plan view as seen on the line 4-4 of Fig. 3.

Referring more particularly to the drawing, a vessel or trough in which the mix is produced is indicated by 5. Journalled in the end walls of the trough is a shaft 6, upon which are mounted blades 23 for the purpose of agitating the ingredients and scraping the cement from the bottom thereof. These blades are suitably disposed and spaced on the shaft. Mounted upon the trough are air nozzles 7 connected to a common manifold 8 to which air is supplied from a source of compressed air through a pipe 9, such as a flexible hose. The air nozzles 7 are the same in construction and are spaced as found convenient. They comprise cylindrical casings 10 having extensions 11 which are reduced in diameter and externally threaded, so that each casing may be introduced into and secured in a threaded opening in the wall of the trough. Each casing 10 has a plunger chamber communicating through a bore 11 with the

trough. The end of the chamber is internally threaded and a plug 12 having a bore for a plunger stem is secured therein. A lateral nipple 13 communicates with the chamber, and a coupling 14 connects the manifold 8 to the casing.

Mounted within the chamber of the casing 10 is a plunger 15 having projecting therefrom a cleaning stem 16 adapted to enter the outlet bore of the nozzle. When the plunger 15 is moved to cover the port opening from nipple 13, pin 16 is in the bore of the nozzle. Communication is then cut off between the nozzle and the air supply. The pin 16 prevents the entrance of plastic material into the nozzle mouth and also cleans the latter. Connected to the plunger 15 is an operating stem 17 having a hand wheel 18 secured to the end thereof. The hand wheel is provided with a hub from which extends a locking pin 19. Encircling the stem 17 is a compression spring 20. The plug 12 has a cylindrical extension 21 provided with a bayonet slot 22 to receive the pin 19.

Water, plaster, and such other ingredients as are desired are introduced into the trough 5, the shaft 6 is rotated, plungers 15 are retracted to open the air nozzles, and air enters the trough being beaten or whipped into the mixture by the paddles which move so as to drag the air downwardly with the action of gravity into the mass. This also acts to agitate and mix the ingredients. Minute bubbles become distributed throughout and suspended in the mass.

After the mixture has been sufficiently treated, the plungers 15 are projected by pushing the hand wheels 18 inwardly so that pins 19 enter into the bayonet slots 22, the wheels then being turned to dispose the pins 19 in locking position. In this position, the cleaning pins 16 fill the nozzle apertures and push any cement outwardly. The trough can now be turned to empty it of the plastic mass. The latter is used in the manner common for plaster board, in setting and forming a porous or spongy body.

What I claim is:

1. The method of aerating a mass of plaster which consists in placing such a mass into a chamber, introducing a gaseous agent thereinto at the periphery thereof, and creating a whirling agitating movement so

as to drag said agent thereinto with the action of gravity and entraining the same in the body of said mass.

5 2. The method of aerating a mass of plaster which consists in injecting a gaseous agent inwardly into the mass at dispersed points, and mechanically creating a whirling beating movement transverse to the path

of the agent and with the action of gravity into said mass so as to entrain the same 10 therein.

In witness that I claim the foregoing I have hereunto subscribed my name this 7th day of April, 1925.

JOHN SCHUMACHER.