March 23, 1954 E. C. SUDZIARSKI 2,672,664

MAGNETIC FORM FOR USE IN MAKING MOLDS

Filed May 24, 1951 2 Sheets-Sheet 1

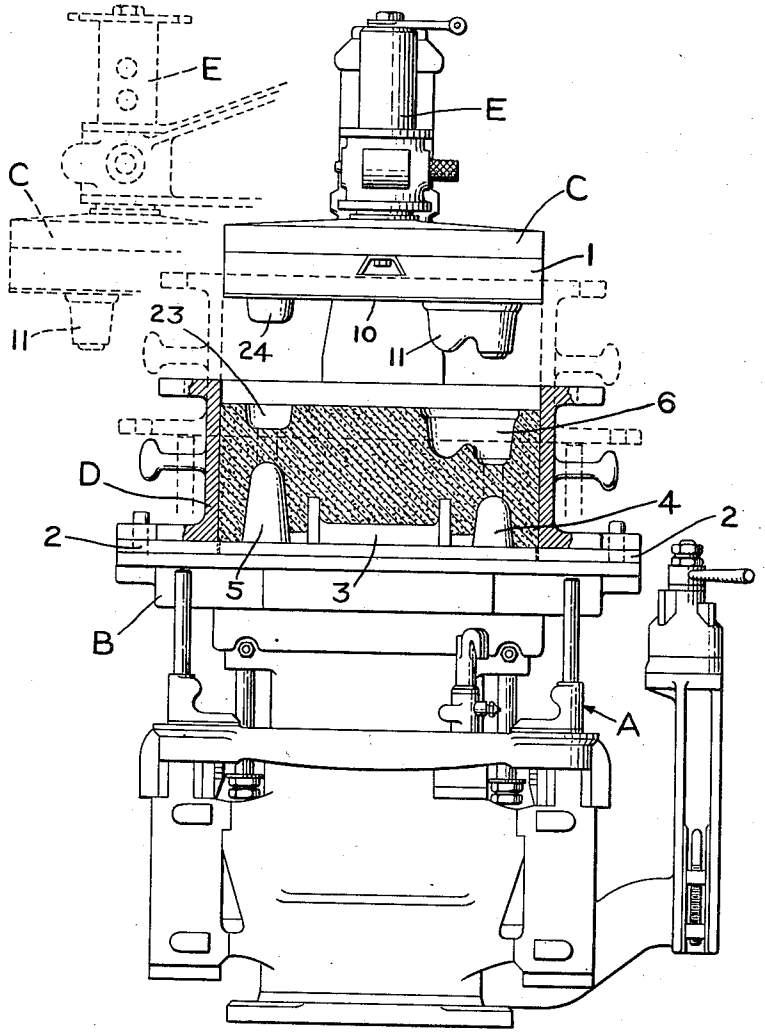


FIG. 1

EUGENE SUDZIARSKI
INVENTOR.

BY Robert Meyer
Attorney

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2 Sheets-Sheet 2

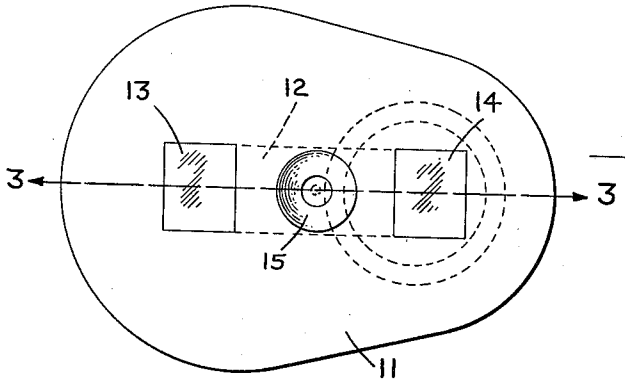


FIG. 2

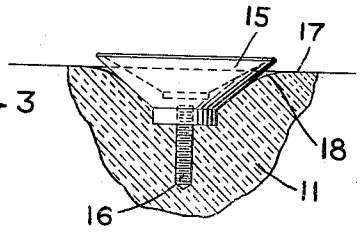


FIG. 4

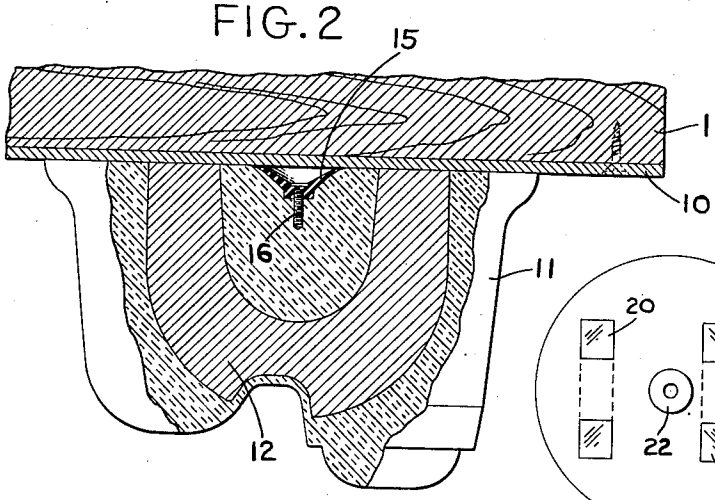


FIG. 3

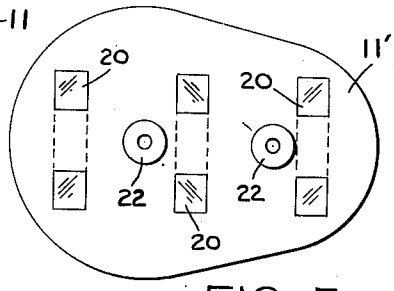


FIG. 5

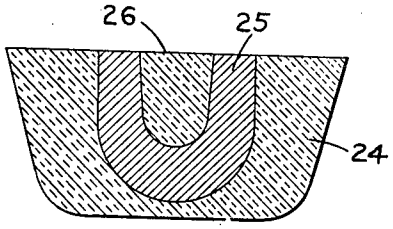


FIG. 7

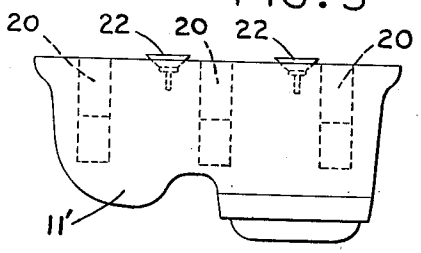


FIG. 6

EUGENE SUDZIARSKI
INVENTOR.

BY Robert Meyer
attorney

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MAGNETIC FORM FOR USE IN MAKING MOLDS

Eugene C. Sudziarski, Belleville, N. J.

Application May 24, 1951, Serial No. 228,079

3 Claims. (Cl. 22—157)

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This invention relates to the forming or making of molds in metal or other foundry work, and more particularly to forms for forming pouring basins, riser locator impressions, etc. in sand molds. Heretofore it has been the practice in the forming of sand molds to attach the forms for making pouring basins, riser locators or the like in the sand mold, to the squeeze board by bolts so that the forms may be located in various positions on the squeeze board depending upon the pattern from which the mold is made. This not only requires the employment of squeeze boards having a large number of bolt receiving holes therein to allow for the attachment of the forms to the board in the location required, but requiring considerable labor time consumption in removing the bolts, relocating the form and rebolting it to the squeeze board. The useful life of such squeeze boards, forms and bolts is comparatively short due to the wear and tear thereon occasioned by the many changes required, particularly in instances where only a few molds are made at one time from one pattern.

The principal object of the present invention is the provision of forms for use in making foundry molds which are magnetically attached to the squeeze board and may be manually removed therefrom and replaced in any desired location, completely eliminating the use of bolts and greatly reducing the labor time required to make the change of location of the forms on the squeeze board. The magnetic forms materially cut down the time required to make a mold and consequently reduce the cost of mold production, and the present invention also increases the useful life of the forms and squeeze boards in that the wear and tear as occasioned by changing the position of bolt attached forms is eliminated.

The use of the present invention not only results in savings to the foundry operator but enables molders, most of whom work on a piecework or incentive scale of wage plan, to make more molds in a given length of time and consequently increase their wages.

With these and other objects in view, as may appear from the accompanying specification, the invention consists of various features of construction and combination of parts, which will be first described in connection with the accompanying drawings, showing a magnetic form for use in making molds of a preferred form embodying the invention, and the features forming the invention will be specifically pointed out in the claims.

In the drawings:

Figure 1 is a view of an ordinary type of tamping sand-mold-forming machine with a flask thereon which is shown in section to illustrate the manner in which the squeeze board-carried magnetic forms work.

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Figure 2 is a plan view of a magnetic pouring-basin-making form constructed in accordance with the present invention.

Figure 3 is a cross section through the pouring-basin-making form and taken on the line 3—3 of Figure 2.

Figure 4 is an enlarged detail view partly in section of the pouring-basin-shaping form.

Figure 5 is a plan view of a modification of the pouring-basin-making form.

Figure 6 is a side elevation of the modified form shown in Figure 5 of the drawings.

Figure 7 is a section through a magnetic riser locator impression-making form.

Referring more particularly to the drawings, the molding machine generically indicated at A in Figure 1 of the drawings is of any approved type of molding machine which may be purchased upon the open market and it includes the pattern plate supporting table B and the squeeze board carrier C to which the squeeze board 1 is attached in the usual manner. In the making of molds, a pattern plate 2 carrying a section of the pattern 3 from which the mold is to be made is placed upon the table B and a flask D of usual construction is placed upon the pattern plate 2 about the pattern, as shown in Figure 1 of the drawings. The pattern 3 includes the pouring riser forming section 4 and the outlet forming riser 5 as is ordinary in pattern construction. After the pattern and flask have been properly positioned on the table the flask is filled with sand, shaken down and tamped by the vibration of the table B, and the swingable head structure E of the molding machine which carries the squeeze board 1 is then moved into position over the flask and the sand in the flask is then further packed and tamped between the squeeze board 1 and the pattern carrier plate 2 in the usual manner. In the making of a mold it has become the practice to use forms carried by the squeeze board 1 to make the pouring basin shown at 6 and in some instances a form to make an impression in the mold in alignment with the outlet riser 5, and it is with such devices that the present invention is concerned. As hereinabove stated, it has been the general practice to attach pouring basin impression-making form and the riser locator impression making form to the squeeze board 1 by bolts which due to the fact that the position of these forms on the squeeze board must be changed with every different pattern from which

a mold is formed results in time-consuming costly labor and reduces the rate of production of molds, as well as causing considerable wear on the squeeze boards, bolts and forms, making it necessary to replace the squeeze boards, etc., quite frequently.

The present invention embodies a combination of squeeze board and impression-making forms which eliminates the use of bolts with their companionable high labor costs and replacement costs. In carrying out the present invention, the squeeze board 1 has a metal plate 10 attached to its under surface in the event that the squeeze board is made of wood or a metal which is not subject to magnetic attraction.

Figures 2, 3 and 4 show a pouring basin or impression-making form 11 which is molded in the desired shape out of any suitable thermo-setting plastic and which has a U-shaped electric magnet 12 embedded therein with its opposite polar ends indicated at 13 and 14 flush with the upper flat squeeze board engaging surface of the form 11, as clearly shown in Figures 2 and 3 of the drawings so that the magnetic action of the magnet 12 will hold the form 11 against the squeeze board 1 in any desired position on the bottom of the squeeze board.

Due to the fact that there is considerable vibration in the operation of the molding machine A during the forming of a mold, the form 11 may slip slightly or slightly alter its position on the squeeze board 10 and to prevent such action a suction cup 15 is carried by the mold 11. The suction cup 15 is made of rubber, synthetic rubber or other suitable resilient material as is usual in the construction of ordinary type of suction cups, and it may be attached rigidly to the body of the form 11 in any suitable manner. In the drawings, however, a threaded stud 16 is shown attached to the suction cup 15 and embedded in the thermo-setting plastic of which the form is made. The thermo-setting plastic, hardening in the threads of the stud will securely hold the suction cup in place, or if it is so desired and is preferable after the form 11 has been molded and set, a threaded opening may be drilled therein into which the stud 16 is threaded for connecting the suction cup to the form 11. As shown in Figure 4 of the drawings, the perimetrical edge portion of the suction cup 15 projects outwardly from the flat squeeze board engaging the face 17 of the form 11 when the form is not attached to the squeeze board and when the form is attached to the squeeze board by means of the magnet 12 the suction cup is slightly deformed as shown in Figure 3 of the drawings so that its perimetrical portion is flush with the face 17 of the form and is in engagement with the lower face of the squeeze board 1 to provide a suction binding action to hold the form 11 against accidental displacement during the vibration of the mold-forming machine.

In Figures 2 and 3 of the drawings a single magnet 12 is shown embedded in the body of the form 1 and this magnet extends along the longest dimension of the form. Also a single suction cup 15 is shown in this form of the invention. It is to be understood, however, that various locations of the magnet, various numbers of magnets and various numbers of suction cups may be employed to meet the requirements of holding the impression-making form firmly in place on the squeeze board. In Figures 5 and 6 of the drawings one such modification of the invention is shown.

In Figures 5 and 6 a plurality of horseshoe magnets 20 are embedded in the form 11' and they extend crosswise of the form. Each of the magnets 20 has its opened polar ends exposed at the flat face of the form 11' which is to engage the squeeze board, the same as the form shown in Figures 2 to 4 inclusive. In the form shown in Figures 5 and 6, a plurality of suction cups 22 are shown which are identical with the suction cups 15 and operate in the same manner.

In Figure 7 of the drawings a magnetic form is shown which is provided for the purpose of making an outlet riser locating impression in the pouring side of the mold, such impression being shown at 23 in Figure 1 of the drawings. The form 24 is made in the same manner as the form 11, that is, it is preferably molded from a thermo-setting plastic, although if it is so desired the forms 11 and 24 may be molded of any suitable material which will not deflect magnetic current flow of the magnets embedded in the forms.

The riser locator impression making form 24 has a magnet 25 embedded therein, the opposed polar ends of which magnet are flush with the flat squeeze board engaging surface 26 of the form and are exposed so that the form 24 may be magnetically attached to the squeeze board. In Figure 7, the form 24 is shown as not having a suction cup carried thereby, but it is to be understood that if it is desired or necessary, a suction cup such as the cup 15 may be attached to the form 24 in the same manner as the suction cup 15 is attached to the form 11.

It will be noted in Figure 4 of the drawings that a portion of the form 11 is cut away or rounded out as shown at 18 to receive the perimetrical portion of the suction cup 15 when it is deformed during attachment to the squeeze board.

It is to be understood, of course, that the magnets 12, 20 and 25 have sufficient magnetic strength to hold the forms firmly against the squeeze board but permit the form to be manually removed for relocation on the squeeze board.

It will be understood that the invention is not to be limited to the specific construction or arrangement of parts shown, but that they may be widely modified within the invention defined by the claims.

What is claimed is:

1. In a molding machine for forming pouring basins, riser locator impressions and the like in molding materials including, a squeeze board having a magnetizable sheet thereon and adapted to be moved towards and away from said molding materials, and a pattern having a seating face and an impression-making exterior face, said pattern having magnetic means embedded therein with the polar ends thereof flush with and exposed at said seating face to removably mount the pattern at any point on said magnetizable sheet.

2. In a molding machine for forming pouring basins, riser locator impressions and the like in molding materials including, a squeeze board having a magnetizable sheet thereon and adapted to be moved towards and away from said molding materials, and a non-distortionable pattern having a seating face and an impression making exterior face, said pattern having magnetic embedded means therein with the polar ends thereof flush with and exposed at said seating face to

removably mount the pattern at any point on said magnetizable sheet.

3. In a molding machine for forming pouring basins, riser locator impressions and the like in molding materials including, a squeeze board having a magnetizable sheet thereon and adapted to be moved towards and away from said molding materials, and a pattern having a seating face and an impression-making exterior face, said pattern having magnetic means embedded therein with the polar ends thereof flush with and exposed at said seating face to removably mount the pattern at any point on said magnetizable sheet, and at least one suction cup carried by said pattern to provide a suction action between the pattern and said magnetizable sheet,

the rim of said suction cup projecting slightly beyond said face of the pattern whereby when the pattern is drawn firmly against the magnetizable surface by said magnet the suction cup will deform to provide a firm suction action.

EUGENE C. SUDZIARSKI.

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