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A. H. PETERSON

2,423,341

BLOWHOLE PLUG FOR SAND BOXES OR CONTAINERS

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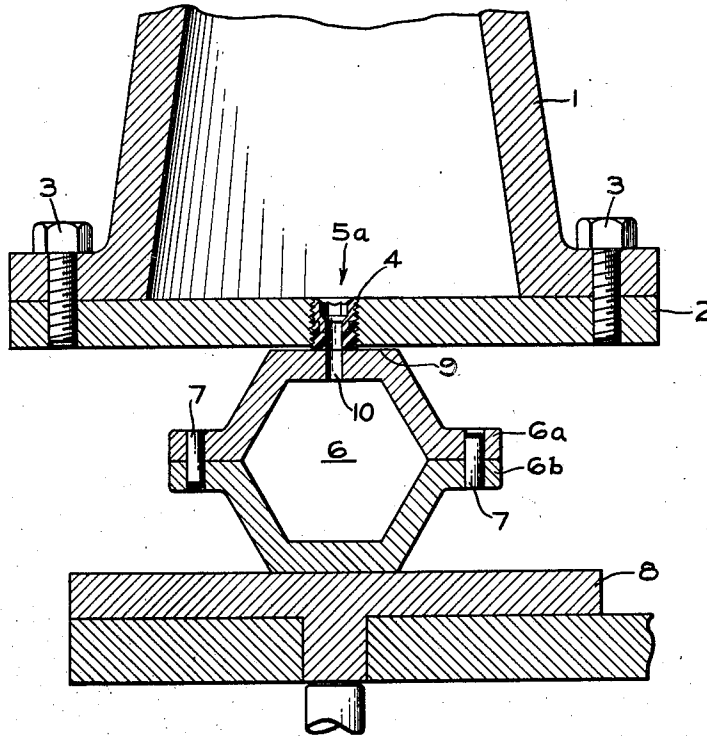


FIG-1

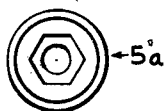


FIG-2

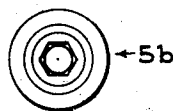


FIG-4

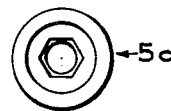


FIG-6

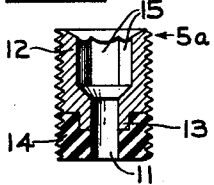


FIG-3

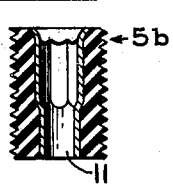


FIG-5

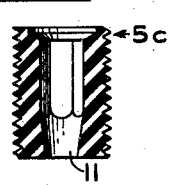


FIG-7

INVENTOR.

BY *A.H. Peterson*

Merrill M. Blackburn.
ATTORNEY

UNITED STATES PATENT OFFICE

2,423,341

BLOWHOLE PLUG FOR SAND BOXES
OR CONTAINERS

Axel H. Peterson, Rock Island, Ill.

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1 Claim. (Cl. 22-10)

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My present invention relates to molding apparatus and more particularly to improvements in sand boxes or containers for molding sand. Specifically, my invention relates to means for preventing the escape of sand and air between the sand box and, for example, a core box, when sand is being blown from the sand box to the core box. It is a common experience in molding to find that the metal parts do not fit together closely enough to prevent air from blowing through between the bottom of the sand box and the top of the core box, said air carrying with it fine sand which scores the adjacent metal parts, thus causing an increase in leakage of air. I have found that, by enlarging the blow hole in the bottom or base plate of the sand box, tapping the same, and putting through this hole a screw-threaded plug formed from a substance such as neoprene or a combination of neoprene and metal, with the synthetic extending slightly below the bottom of the bottom plate, a sufficiently tight engagement can be made around the blow hole to prevent air from escaping between the plug and the core box, thus eliminating this blow-by.

In the drawings annexed hereto and forming a part hereof,

Fig. 1 represents, fragmentarily, a vertical, longitudinal section of a core-forming machine embodying my present invention;

Figs. 2 and 3 represent, respectively, a plan view and a longitudinal section of one type of plug which I have produced for the purpose stated;

Figs. 4 and 5 represent, respectively, a plan view and a longitudinal section of another form of this plug; and

Figs. 6 and 7 represent, respectively, a plan view and a longitudinal section of still another form of this plug.

Reference will now be made in greater detail to the annexed drawings for a more complete description of this invention. The sand box is shown at 1 and it will be understood that this is merely typical of many forms of sand boxes now well known in the art. At 2 is shown the bottom plate which is secured to the sand box by bolts 3, in a manner comparable to that disclosed in the Demmler Patent No. 1,480,747. By enlarging the blow hole in the plate 2 and tapping this, as shown at 4, it is possible to screw into this opening a screw-threaded plug 5a, 5b, 5c or a similar plug of some other form. I have chosen to illustrate a core box 6 as comprising upper and lower parts 6a and 6b which are detachably connected by the dowel pins 7. This core box is shown as resting on a platform 8 which may be raised to press

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the upper surface 9 against the lower edge of the plug, with the holes 10 and 11 in registry. It is not necessary to have the plug extending much below the plate 2 as it is only necessary to have a tight fit between the surface 9 and the lower end of the plug so as to prevent air blowing out between them.

I have shown the plug in Figs. 3, 5, and 7 in three different forms, the first two being composite plugs while the last is constructed entirely of a suitable synthetic composition, preferably neoprene. Each of these plugs is shown as having the upper end of the hole 11 enlarged and formed as a hexagon, in cross-section. This is in order that a tool of proper form may be inserted in the opening and turned for the purpose of screwing the plug into or out of the hole 4.

The plug of Figs. 2 and 3 is shown as having an upper metallic section 12 with a lower reduced portion 13 to which is bonded a section 14 of neoprene which continues the general form of section 12, the threads of the two sections being identical in shape and continuous so that it is possible to screw this plug into the base plate 2, as shown in Fig. 1. This plug should extend somewhat beyond the lower face of the plate 2 and, preferably, should not extend above the top thereof. Therefore, when the core box 6 is pressed upwardly against the plug, the neoprene yields sufficiently to form a tight seal entirely around the apertures 10, 11. This will keep air from blowing out between the core box and the plug and will reduce to a minimum the amount of scoring of the face 9 and any abutting parts. As shown clearly at 15, the upper end of the hole 11 is somewhat enlarged and is hexagonal in form, thus making it possible to insert a suitable wrench for the turning of the plug.

The plug of Figs. 4 and 5 differs somewhat from that of Figs. 2 and 3 in that the body of the plug is substantially entirely of neoprene with just a liner extending substantially from end to end of the plug. The upper end of the enlargement of the hole 11 is, preferably, flared somewhat in order to make it easier to insert the wrench, as well as to reduce the friction between the plug and the sand entering the hole 11.

The plug of Figs. 6 and 7 is made entirely of a yielding, non-metallic, synthetic material, for example, neoprene, and is shown as having the same external configuration as the other two. This, as well as the other two plugs shown, will yield when the core box is pressed against it, thus causing a tight fit and preventing any blow-by of the air.

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While I have shown three forms of embodiment of the present invention, I have embodied this idea in several other forms and the present disclosure is therefore to be regarded merely as illustrative, rather than showing the entire scope of this invention; however, I prefer the type of plugs shown in the present drawings.

While I prefer plugs of generally cylindrical configuration with screw-threaded exterior surfaces fitting in holes of the same general form in the plate 2 and provided with cooperating screw threads, it will be understood that various other embodiments of this idea are possible. For example, plugs of generally spool-shaped configuration provided at their ends with outwardly extending flanges may replace those shown in Figs. 2 to 7, inclusive. The hole in the plate 2 would have its ends countersunk for the reception of the flanges of the plug in order that the plug would be held in place against longitudinal pressure, either up or down. Of course the lower end of this plug would need to project slightly beyond the bottom of the plate 2. Another form of plug would be one having its middle portion of greater diameter than its two ends, the hole in the plate being under-cut to accommodate the shape of the plug. Another form would be the reverse of that just described, in which the middle part is small in diameter while the two ends are enlarged. In such a case, the plate 2 would need to have the hole 4 reamed out upon opposite sides so that the conical surfaces of the plug would fit the faces of the metal.

The base plates can be formed with holes of different shapes therein and can have the plugs molded in these holes and vulcanized in place, with the lower end projecting slightly beyond the face of the base plate. This would avoid the necessity of enlarging and tapping the hole 4 for the insertion of threaded plugs, if one wishes to be spared the necessity of this extra work. However, I prefer the use of screw-threaded plugs as set forth herein.

A simple way of accomplishing the desired end is to provide a base plate with a hole there-through, as described above, and then counter-bore the underside of this plate so that the hole through the plate has an enlargement at

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its lower end. A suitable washer, slightly larger in diameter than the counterbore and made of a suitable yielding synthetic material, may then be inserted in the counterbore, with its lower portion projecting slightly beyond the face of the plate. Then, when the core box is pressed against this, the space between the sand box and the core box will be adequately sealed against blow-by.

It will of course be understood that the specific description of structure set forth above may be departed from without departing from the spirit of my invention as set forth in this specification and the appended claim.

Having now described my invention, I claim:

In a machine of the character stated, a sand-feeding box provided with a bottom plate having a screw-threaded sand delivery opening, and a liner, yieldable at its lower end and externally screw-threaded throughout its length, screwed into said opening and projecting slightly beyond the bottom surface of the plate, said liner having in its upper end a non-circular opening for the reception of a wrench whereby the liner may be screwed into and removed from the opening in the plate, and said non-circular opening having an extension reaching to the lower face of the liner and serving to deliver sand to a core box or other place of use.

AXEL H. PETERSON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
875,228	Witham	Dec. 31, 1907
1,950,632	Romph	Mar. 13, 1934
1,030,326	Peterson	June 25, 1912
1,905,357	Zimmerman	Apr. 25, 1933
2,049,732	Blake	Aug. 4, 1936

FOREIGN PATENTS

Number	Country	Date
537,473	Germany	Nov. 3, 1931
643,165	Germany	Mar. 30, 1937