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CORE BOX VENT PLUG

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Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

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This application constitutes a division of my pending application, Serial No. 156,450, filed July 30, 1937, for a patent on a core box vent. The present invention relates to a core box vent for mounting in a core box into which sand is blown, the purpose of the invention being to provide a means for the escape of air from the core box while, at the same time, preventing the sand from being blown therefrom.

It is an object of the invention to provide a core box vent which will be simple in structure, economical of manufacture, durable, highly efficient in use and easily and quickly inserted in position.

Another object of the invention is the provision of a device which will be light and while effectively preventing the escape of sand from the core box, will permit the air to freely pass therethrough.

Another object of the invention is the provision of a core box vent comprising a plug-like body having slits cut thereby through which the air may pass, the slits being sufficiently small to prevent the passage of the sand therethrough.

Another object of the invention is the provision of a core box vent comprising a plug-like body having slits formed therein with portions directed cross-wise of the end face of the body and portions directed axially of the body so that a maximum passage for escaping air is provided and a high degree of efficiency attained.

Other objects will appear hereinafter.

In the drawing,

Fig. 1 is a vertical sectional view through a core box showing the invention applied,

Fig. 2 is a perspective view of one form of the invention,

Fig. 3 is a vertical sectional view of the form shown in Fig. 2,

Fig. 4 is a perspective view of another form of the invention,

Fig. 5 is a central longitudinal sectional view of the form shown in Fig. 4,

Fig. 6 is a perspective view of another form of the invention,

Fig. 7 is a side elevational view of the form shown in Fig. 6 with parts broken away and parts shown in section,

Fig. 8 is a perspective view of another form of the invention,

Fig. 9 is a longitudinal sectional view of the form shown in Fig. 8.

In Fig. 1, I have shown the invention applied to a core box having the upper section 16 and the lower section 17 determining, together, the core opening or passage 18. Openings 19 are formed through the core box sections communicating with the core opening or passage 18 so that when sand is blown into the core, the air may be permitted to escape. In these openings 18, the invention is inserted when in use. In the form shown in Fig. 2, I have indicated a cylindrical metallic body 20 having adjacent one end the inwardly projecting rib or bead 21 to provide a ledge or shoulder upon which may be positioned a closure disk 22 and over which the terminal edge 23 of the cylindrical body 20 is crimped so as to securely clamp the disk 22 against the member 21. Formed in this disk 22 is a plurality of slits 24 through which the air may escape, these slits being sufficiently fine to prevent the sand from passing therethrough. In use, the cylindrical body 20 is inserted into the opening 18 as a press fit with the disk bearing end facing inwardly.

In the form shown in Fig. 5, I provide a cylindrical cup-shape member 25 having a plurality of slits or slots 26 formed in its base 21. These slits are generally formed by a sawing operation so that the opposite sides of the slits or slots 26 extending into the side wall of the member 25 are axially directed slots 28, registering with the slots 26. In use, the body 25 would be inserted into the opening 18 as a press fit with its base directed inwardly. The slots 26 and 28 are sufficiently fine to prevent escape of sand therethrough, while, at the same time, serving as an air vent. It will be noted that in this form, the radially directed slots 26 terminate outwardly from the center of the base 27 so that they do not cross each other at the center to provide an enlarged opening.

In Fig. 6, a cylindrical body 30 is formed which is solid. In the end faces are provided the slots 31, each of which communicates with an axially directed slot 32 extending inwardly from the periphery of the body 30. Either end of this plug may be inserted inwardly when the plug is positioned in the opening 18 in which it is intended to be used. In the form shown in Fig. 8, I have indicated a cup-shaped body 33 having formed in its base 34 the slots 35, each of which terminates at its ends with an axially directed slot 36. This results from the forming operation, the slots 35 being made by a sawing or milling operation. It is believed obvious that the slots 36 need not extend greater distance than the thickness of the base 34, or they may be extended a considerable distance along the body.

By using the slitted constructions illustrated, a
marked advantage is obtained over a structure in which a perforated screening member is used, or in which a plain screen mesh is used. The slits may be multiplied to any desired number to afford a rapid air venting to permit a rapid blowing of the sand into the passage 18. In the forms in which the slits extend across the end of the plug and also extend axially, a marked advantage is obtained over the structure in which only an end venting is afforded as is the case with the structure shown in Fig. 2, while the structure illustrated in Fig. 5 has a marked advantage over a structure in which a mesh or perforated or venting member is used. The depth of the slots 24 is determined by the thickness of the disk 22. Likewise the depth of the slots 26 are determined by the thickness of the bottom 27 and the depth of the slots 35 are determined by the thickness of the bottom 34. The slots 31, of course, may be said to be of a depth equal to the length of the body 30. The advantage in the structure shown in Fig. 2 over a vent plug having a perforated disk or a screen mesh as the venting member is common to all of the forms illustrated. When a screen mesh is used and the sand is being blown into the passage 18, should one of the openings in the screen become clogged with a particle of sand, that opening no longer can serve as a vent opening and air striking against it is, of course, deflected inwardly of the passage 18 or at least in a direction which would not facilitate its being vented from the passage 18. Should a particle of sand lodge in one of the slots 24, 26, 31 or 35, the slot would still function for conducting air from the passage 15 because a channel is thus provided through which the air would flow after striking the lodged particle of sand until it reached a point where the passage was free, at which point it would pass through the disk 22 or the bottoms 27, 30 or 34. By having the slots which extend across-wise of the end face of the plug communicating with the axially directed slots 28, 32, or 36, an increased efficiency is obtained. Should the slots 26, 31 or 35, for any reason become clogged, they would still serve as conducting channels for conducting the air to the axially directed communicating slots, and thus a proper venting of the air would continue.

Since it is well known that the sand blown into the molds is very fine, it is obvious that the width of the slots is quite narrow and in the constructions illustrated, of considerably less width than the depth of the slots.

Another advantage of the slitted construction is that the number of slits may be varied, depending on the use to which the device is put and it is apparent from the drawing that a large part of the end face of the plug, which is directed inwardly of the cavity 18, is imperforate, thus presenting a larger solid body directed inwardly of the passage 18 than would be present were a screen mesh to be used. This is a distinct advantage over a structure having a mesh because the escape of sand is reduced to a minimum while ample venting of the air is still present.

What I claim as new is:
1. A vent plug of the class described comprising a cup-shaped member having a plurality of non-intersecting slots formed in its base to provide elongated passages therethrough each of said slots communicating with an axially directed slot formed in the wall of said member.
2. A vent plug of the class described comprising a cup-shaped member having a plurality of chordally extending slots formed in its base, each of said slots communicating at its opposite ends with an axially directed slot in the wall of said member.
3. A vent plug of the class described comprising a cup-shaped member having a plurality of radially directed slots formed in its base and terminating at their inner ends outwardly from the center thereof and communicating at their outer ends with an axially directed slot formed in the wall of said member.
4. A vent plug of the class described, comprising: a plug-forming body insertible at one end into a vent opening in a core box, said body being provided with a plurality of spaced slots in one of its ends, each of said slots communicating at at least one end with an axially directed slot on said body, said axially directed slots opening outwardly from the periphery of said body, said slots providing passages for the escape of air from said core box.
5. A vent plug of the class described, comprising: a cup-shaped body insertible at one end into a vent opening in a core box, said body being provided with a plurality of spaced, non-circular, slots formed in its base, said slots projecting inwardly from the periphery of said base toward the center thereof and terminating short of the center, said slots providing passages for escape of air therethrough.
6. A vent plug of the class described, comprising: a cup-shaped member insertible at one end into a vent opening in a core box, the base of said member being provided with a plurality of spaced slots formed therethrough, each of said slots communicating at at least one of its ends with an axially directed slot formed in the wall of said member, said axially directed slots opening outwardly of the periphery of said wall.

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