

C. HANSON.

MEANS FOR MAKING CORE VENTS.

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982,670.

Patented Jan. 24, 1911.

Fig. 1.

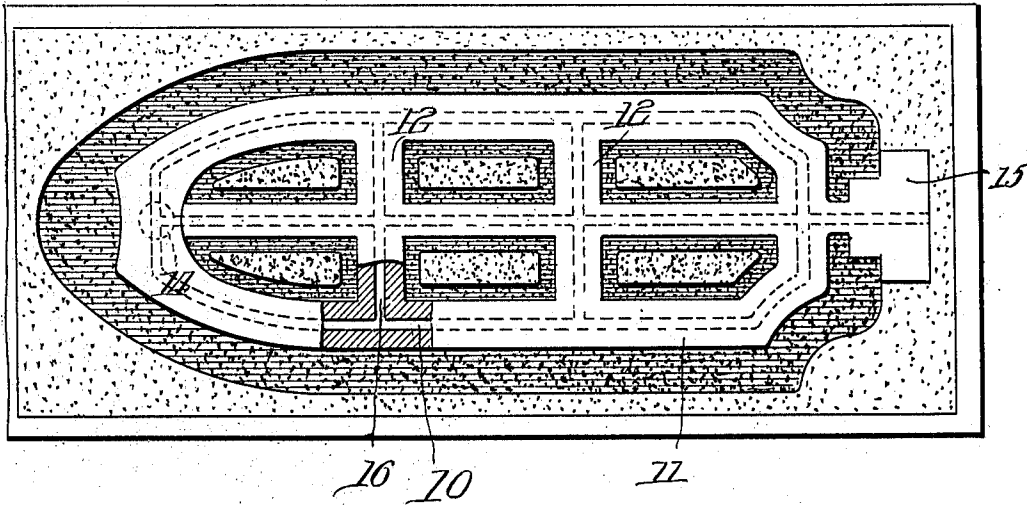


Fig. 2.

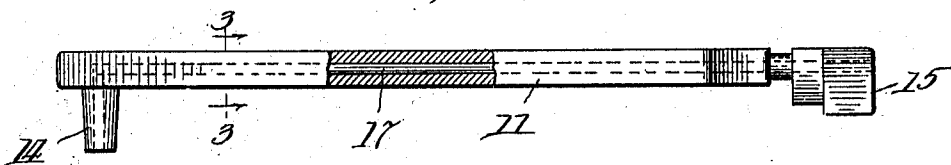


Fig. 3.

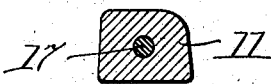
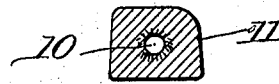


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

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MEANS FOR MAKING CORE-VENTS.

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To all whom it may concern:

Be it known that I, CHARLES HANSON, a citizen of the United States, and a resident of Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Means for Making Core-Vents; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to a novel means of producing core vents in sand cores for molding purposes, and to a novel compound that is adapted to be introduced into the core in the form of a strand or core body where the core vents are to appear, and which is of such character as to melt and be diffused through the interstices of the sand core around the space previously occupied thereby so as to leave a clean cut core vent in the core through which the gases from the molten metal may escape during the casting of the metal in the mold containing the core.

The object of the invention is to provide means of producing a core vent in the core which will obviate the necessity of introducing a wire into the core when forming the same and thereafter withdrawing the wire from the finished core to leave a core vent, and also obviates the necessity of forming the core of two matched grooved parts to produce, when the parts are pasted together, the core vent or passage. The former or wire method has heretofore been used in making simple cores where the wire can be readily withdrawn after the core is baked. The latter method of grooving and matching the core members has been used where the core is so complicated as to preclude the possibility of withdrawing a wire or the like to produce the core vent. When employing the wire method of producing the vent there is liability of breaking the core structure, when the wire is withdrawn and also having the core vent clogged by the sand filling therein. The second or grooving and matching method is objectionable because of the inconvenience in building up the core, the time required to produce the core with a vent made in this way, and also because of the impracticability of forming and matching the grooves in this cores.

In producing a core vent in accordance

with my invention, I insert in the body of the core, while forming the same, a strand or core like body of a suitable plastic, fusible material which, after the core is formed and is being baked to harden the same, melts and diffuses into the body of the core around the space previously occupied by the strand, and leaves a core vent or passage of the same diameter as said strand. The said mixture is of such character as to not only completely disappear into the body of the sand core and leaves a clear cut core vent or passage, but also has the effect of hardening the material of the core body around the vent, thus leaving the core vent or passage with a solid wall which will not break or collapse into the vent and clog the same.

The material of which I form the mixture from which the strands or elongated bodies are made is of a plastic nature so that said mixture may be readily formed up into such strands, and said mixture is of such consistency and possesses such tenacity that it is readily formed and takes and holds a definite shape under ordinary temperatures. The mixture, after it has been compounded in the manner hereinafter described, is pressed through a forming tube of a size to give the proper diameter to the strands, such diameter depending upon the size of the core vent to be formed thereby. Thereafter when forming the core in the core box, the said strands are laid in the sand of the partially formed core at the places where the core vents are to appear, and when the core is finished the strands will be completely invested by the material forming the core. During the subsequent baking of the core to harden the same the mixture composing the strand melts and is diffused throughout the porous body of the sand core, thereby leaving the core vents or passages of the same size and length as the strand previously inserted into the core.

A mixture which I have successfully used to produce the diffusible core vent strands consists of resin, paraffin, pine tar and linseed oil. The proportions of said constituents which I have used with good results in making a batch of the mixture is as follows:

Resin.....	1 pound,	
Paraffin.....	$\frac{1}{4}$ pound,	
Pine tar.....	2 ounces,	
Linseed oil.....	1 ounce.	110

In preparing this mixture, the resin is

melted over a slow fire for about one-half hour. The pine tar and linseed oil is poured into the resin and the mixture boiled under a slow heat for about one-half hour.

5 Thereafter the paraffin is slowly melted and the melted paraffin is poured into the mixture of resin, pine tar and linseed oil and the resultant mixture allowed to set or harden. Thereafter this mixture is passed through a
10 forming tube of proper size to form the same into a strand, which latter is the product that is inserted into the core during the formation of the same.

The resin acts as a binder for the mixture
15 and also serves to absorb the other ingredients, prevents fusing in warmer weather and serves to harden the wall of the core vent. The paraffin imparts a waxy or plastic consistency to the mixture, so that it may be
20 handled without sticking to the hands, and to a certain extent prevents fusing in hot weather. The paraffin also tempers the resinous mixture and prevents the said walls of the core vent from becoming too hard.
25 It also has the effect to burn away or displace the oil or binding material used in the core sand and allows the ingredients of the core vent mixture to take the place of the core binding material so displaced when the
30 strand material is melted and diffused into the interstices of the core sand. The pine tar imparts a flexible and elastic quality to the strand so that it may be readily bent into form to insert it into the core. The
35 linseed oil is used to give the proper consistency to the material, and assists to harden the sand when the mixture is absorbed by the sand.

The above formula for the mixture is
40 given as a practical formula which has been successfully employed. It will be understood, however, that the proportions above specified may be varied without materially modifying the effect of the same in producing
45 the core vent, and that substantially the same results may be secured with a mixture having slightly different constituents. I have, for example, employed with good results coal pitch, beeswax and turpentine in
50 lieu of the pine tar, paraffin and linseed oil, respectively, and have also produced a mixture which I have used with fair results consisting of resin, linseed oil and tallow wax. It will be understood, therefore, that the
55 invention is not limited to the exact constituents and to the proportions hereinabove set forth, as long as the resultant mixture possesses the properties of plasticity which permits the same to be molded into a strand,
60 flexibility which permits the strand to be readily inserted into the core as desired, and the capacity for diffusing outwardly and disappearing into the interstices of the core sand under a fusing temperature, together

with the property of hardening the wall of 65 the core vent formed in the core by the melting away of the inserted strand.

I have shown in the drawing a typical form of core in which my improved method of forming the core vent therein may be 70 used to advantage.

In said drawing, Figure 1 is a plan view of a sand mold with a core in position therein formed with a core vent in accordance with my invention. Fig. 2 is a side elevation of 75 the core removed from the mold. Fig. 3 is a cross section on line 3—3 of Fig. 2. Fig. 4 is a like cross section, showing the core vent after the strand has melted out.

The core vent 10 is shown in Fig. 1 of the 80 drawing as extending throughout the outer or surrounding member 11 of the core and the cross members 12, 12, and said vent terminates at one end of the core in the downwardly projecting supporting member 14 85 and at the other end of the core in the supporting projection 15. The core vents 16 in the transverse members 12 are in open communication with the core vents 10 in the outside member 11 of the core, so that there 90 is a free escape for the gases through the core vents from end to end of the core from all parts of the core. In Figs. 2 and 3 is shown the strand 17 of the fusible and diffusable mixture which is laid into the sand 95 core and which, while the core is being baked to harden the same, diffuses and leaves the core vent 10. The material of the strand diffuses outwardly from the core vent or passage into the body of the core, as indicated by the darkened outline in Fig. 4. 100 The core illustrated has been chosen as an example of a core in which my improved method of forming the vent may be advantageously applied. It is obvious that 105 the vent may be formed with equal facility, no matter how complicated the core may be, inasmuch as it is only necessary to incorporate the strand throughout the core as it is formed up to produce vents extending in all 110 directions and at all angles relatively to each other.

I claim as my invention:

1. Means for forming a core vent in a sand core comprising a fusible body adapted 115 to be incorporated in the core when forming the latter and of a nature to harden the core body when diffused thereinto.

2. Means for forming a core vent in a sand core comprising a flexible, fusible body 120 adapted to be incorporated in the core when forming the latter and of a nature to harden the core body when diffused thereinto.

3. Means for forming a core vent in a sand core comprising a fusible body adapted 125 to be incorporated in the core when forming the latter and of a nature to burn away or displace the binder of the core body when

diffused thereinto and to combine with the sand body around the core vent to harden the wall of said vent.

5 4. A flexible, plastic, fusible mixture adapted to be incorporated into a sand core during the formation of said core and of a nature to diffuse into the core body when fused and to harden the core body around the resulting passage or vent.

10 5. A fusible, plastic, flexible strand containing a resinous mixture adapted to be incorporated into a core body during the formation of the core.

6. A compounded mixture for incorpora-

tion in a sand core body to produce by fus- 15
ing thereof a core vent in the body, composed of resin, paraffin, pine tar and linseed oil in substantially the proportions herein specified.

In testimony, that I claim the foregoing 20
as my invention I affix my signature in the presence of witnesses, this 5th day of April, A. D. 1910.

CHARLES HANSON.

Witnesses:

H. M. JACOBSEN,
AUG. J. EISENHUT,
CHRISTIAN JOHNSON.