March 14, 1944. G. P. FORNI 2,344,206

METHOD AND APPARATUS FOR PROVIDING LIFTING HOOKS, AND RECESSES IN CONCRETE BLOCKS

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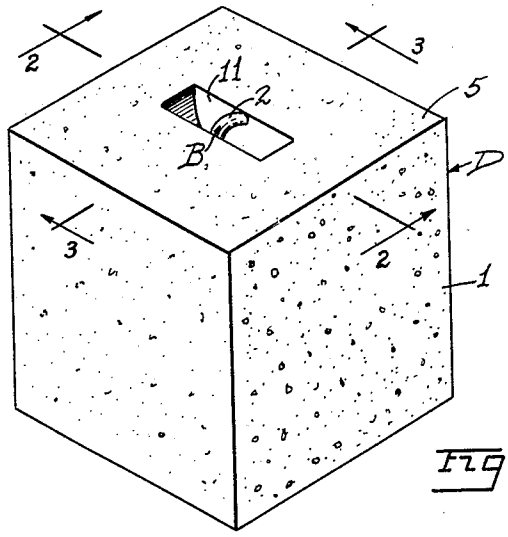


Fig. 1.

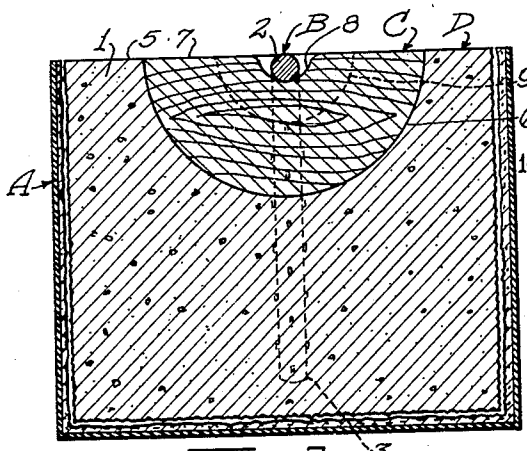


Fig. 2.

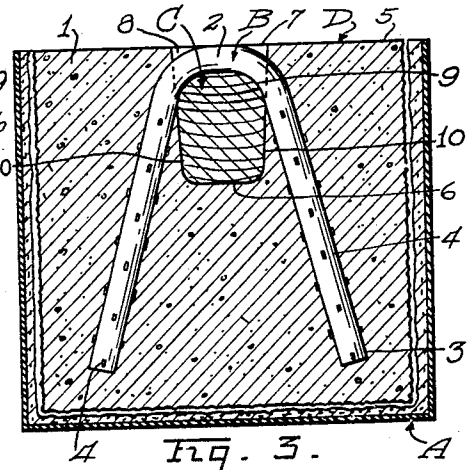


Fig. 3.

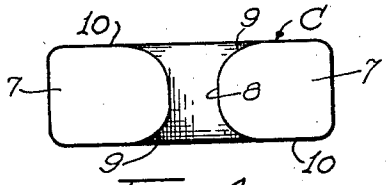


Fig. 4.

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METHOD AND APPARATUS FOR PROVIDING LIFTING HOOKS AND RECESSES IN CONCRETE BLOCKS

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6 Claims. (Cl. 25—118)

The present invention relates to improvements in a method and apparatus for providing a lifting hook and recess in concrete blocks, and it consists of the combinations, constructions and arrangements hereinafter described and claimed.

Concrete blocks when used for ballast in a boat are provided with lifting hooks whose ends lie flush with the top of the block. A recess is provided in the top of the block to permit access to the hook. In the present manufacture of the blocks, the practice is to place the lifting hook in the concrete block before the concrete has set. The hook will gravitate to the bottom of the concrete unless it is buoyantly supported in some way while the concrete sets. Cores made from rice straw have been used for supporting the hook before the concrete has set and for making the recess in the top of the concrete block; but after the concrete has set, it is necessary to dig the rice straw out of the recess and this requires time. Moreover new buoyant hook supporting members or cores must be made from rice straw and this requires additional time.

The principal object of my invention is to provide a buoyant core that may be used over and over again in supporting lifting hooks in the concrete while the latter is setting. The cores are so designed that they may be removed from the block before the concrete has completely set, but only after the concrete has reached a stage where it is firm enough to support the lifting hook and to maintain the wall of the recess.

The buoyant core will maintain the lifting hook in suspended position in the concrete until the latter has practically set. The core is in the shape of a half disc so that it may be removed from the concrete by rotating the half disc about the U-shaped portion of the hook as a pivot. The buoyant core, when removed, forms a recess in the block. The recess is positioned adjacent to the lifting hook so that the block may be lifted by grasping the hook. The device is extremely simple in construction and there is practically no wear to it so that the buoyant core can be used repeatedly.

Other objects and advantages will appear in the following specification, and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawing forming a part of this application, in which:

Figure 1 is an isometric view of a concrete block showing the recess and the lifting hook;

Figure 2 is a section along the line 2—2 of Figure 1;

Figure 3 is a section along the line 3—3 of Figure 1; and

Figure 4 is a plan view of the combined core block and buoyant support.

While I have shown only the preferred form of my invention, it should be understood that various changes or modifications may be made within the scope of the appended claims without departing from the spirit of the invention.

In carrying out my invention I make use of a form for holding concrete, indicated generally at A, see Figures 2 and 3. Into this form I pour concrete 1 to form ballast blocks. The form A may be cubical in shape or any other shape desired.

It is necessary that ballast blocks be provided with lifting hooks and it is further necessary that the lifting hook lie flush with the top surface of the block.. When the hook lies flush with the top surface of the block, a recess must be provided in the block top adjacent to the hook so that the hook may be grasped. In Figures 2 and 3, I show a U-shaped lifting hook B which has a curved or U-shaped portion 2 and outwardly flared legs 3. The legs may have projections 4 thereon that will become embedded in the concrete 1 to prevent the withdrawal of the hook B. The flared legs also prevent the hook from being withdrawn from the block.

It is necessary to embed the hook before the concrete sets and it is further required to suspend the hook so that its top 2 will lie flush with the top surface 5 of the concrete. If this is not done, the weight of the hook will cause it to gravitate to the bottom of the form. A combined core and buoyant support C is used for suspending the lifting hook so that its top 2 will lie flush with the top 5 of the concrete. The core C is in the shape of a half disc and has a circular edge 6 and a flat top 7. A centrally disposed hook-receiving recess 8 extends transversely across the top 7, see Figures 2 and 4. The recess has its ends flared outwardly as at 9 to accommodate the curve in the lifting hook, see Figure 3. The sides 10 of the core may be tapered inwardly slightly as shown to permit the core to be forced into the concrete immediately after the concrete is poured. This taper is very slight and will not interfere with the rotation of the core about the top 2 of the hook as a pivot during the removal of the core. It should be noted that the core is removed before the concrete is completely set so the portion of the con-

crete adjacent to the core can give slightly if necessary to permit the core to be rotated. The core may have parallel sides instead of a slight taper to aid in the removal of the core from the concrete. The core is preferably made of wood and treated with oil so as to be impervious to water.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood.

As already stated, the concrete is poured into the form A until the top of the concrete is level with the top of the form. A number of forms may be filled with concrete at the same time. The buoyant cores C are now placed in the curved portions of the lifting hooks and then the hooks with the cores are placed in the concrete. The size of the core gives it sufficient buoyancy to support the hook. In actual practice the flat top portions 7 of the core will lie flush with the top 5 of the concrete. The recess 8 is deep enough to cause the top of the hook to lie flush with the concrete top 5. The hook is supported in suspended relation during the setting of the concrete. It is possible to smooth the top of the concrete with a trowel while the core is in place. If the core is depressed by the trowel, its buoyancy will cause it to move flush with the top of the block again.

After the concrete has set to a point where it will support the lifting hook and where it will not fill the recess in the block provided by the removal of the core, the operator depresses either one of the two surfaces 7 and this will cause the core to rotate about the curved portion 2 of the lifting hook as a pivot. The circular edge 6 will permit this rotation of the core. The core is removed before the concrete is set to a point where it will interfere with the rotation of the core. When the core is removed, a recess 11 will be formed in the top of the concrete block, see Figure 1. The completed concrete block is shown at D in Figure 1.

I claim:

1. A device for supporting a U-shaped lifting hook in a concrete block while the latter is setting and comprising a float in the shape of a half a disc, the diametrical flat edge of the float having a centrally disposed and transversely extending groove for receiving the U-shaped portion of the hook, the flat edge of the float lying flush with the top of the concrete block while it is setting, the rounded edge and transverse groove of the float permitting it to be rotated about the U-shaped portion as a pivot to remove the float after the concrete has set to a point to support the hook, but prior to the complete setting of the concrete.

2. An article of manufacture comprising a float in the shape of a half a disc, the diametrically flat wall of the float having a centrally disposed and transversely extending recess, said float being adapted to support a U-shaped lifting hook and to receive the U-shaped portion of the hook in the recess.

3. In the manufacture of a concrete block having a U-shaped block lifting hook within the block in such position that the U-shaped portion of the hook will be disposed within a cavity formed in a face of the block, the method comprising placing the curved portion of the hook over a combined float and core and immersing both in the concrete block before the concrete has set, the core float supporting the curved portion of the hook flush with the block top, the underside of the core float being circular, rotating and removing the core out of the block after the concrete has set sufficiently to support the hook, the rotation and removal of the core leaving a cavity in the block that receives the curved portion.

4. A core float for buoyantly supporting a hook in the shape of half a disc with a hook receiving recess in the center of the diametrically extending flat face of the disc, the periphery of the disc permitting it to be rotated out of the recess formed by it after the material has set enough to support the hook.

5. The method of securing U-shaped hooks to concrete units which comprises placing the curved portion of the hook in the recess provided in the flat face of a half-disc-shaped core float, inserting the hook and float into the concrete unit after the latter has been molded and while still in a plastic state, the plastic concrete buoyantly supporting the core float so that the flat face lies flush with the top face of the unit permitting the concrete face to be smoothed with a trowel after the float is in place, and finally removing the float after the concrete has set sufficiently to support the hook, the removal of the float being accomplished by rotating it out of the recess it formed in the concrete unit.

6. The herein described method of embedding a U-shaped lifting hook in a concrete block and forming a cavity in the block for the hook, which comprises placing a core float in the curved portion of the hook, buoyantly supporting the hook in the concrete before the concrete has set by placing the hook and core float in the concrete for causing the float to hold the curved portion of the hook at the top of the block while the concrete is setting, and in rotating the buoyant support about the hook as a center to remove it and leave a cavity after the concrete has set sufficiently to support the hook.

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