April 8, 1930. J. A. DE VILBISS 1,753,776

FILLED CONCRETE BLOCK AND METHOD OF MAKING THE SAME

Filed May 23, 1927

Fig. 1.

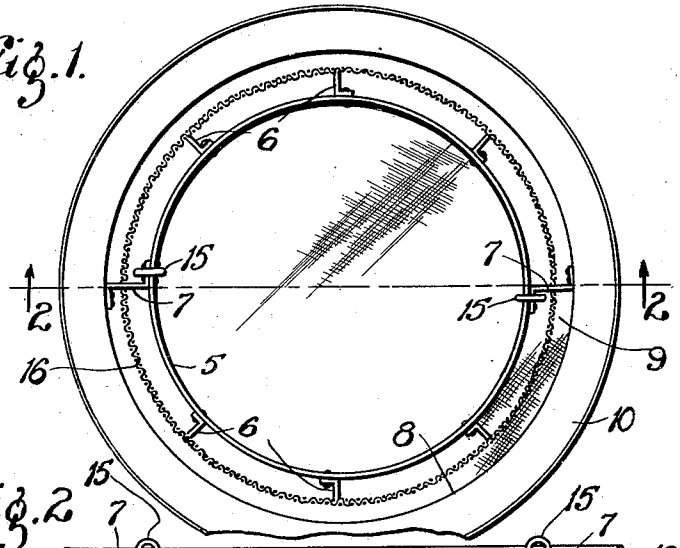


Fig. 2.

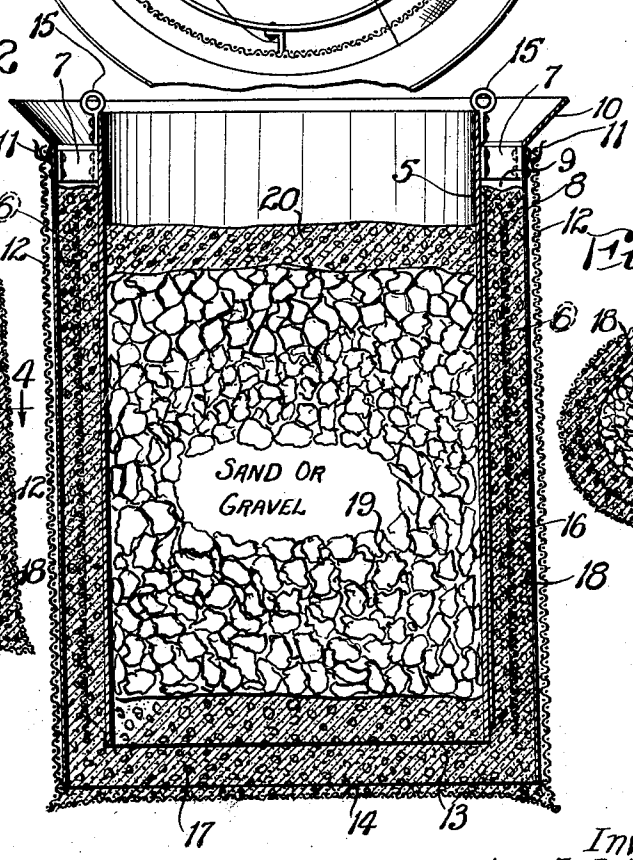


Fig. 3.

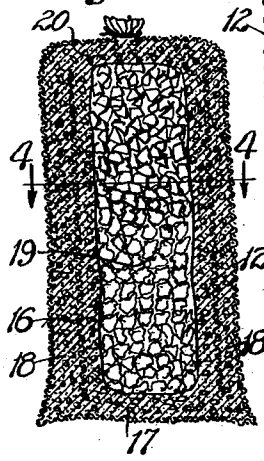
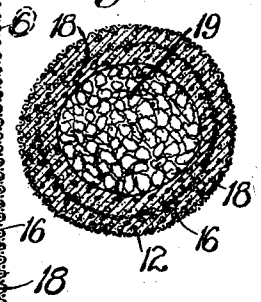


Fig. 4.



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UNITED STATES PATENT OFFICE

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FILLED CONCRETE BLOCK AND METHOD OF MAKING THE SAME

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My invention relates to improvements in filled concrete blocks and method of making the same and has for its primary object a concrete block having a central filling composed of sand, gravel or other non-cohesive material which is surrounded by a cement casing. This casing is either plain cement or concrete and may be reinforced if desired. The entire block is surrounded by a fabric bag so that the necessity of allowing the block to set in the molds is obviated.

A further object is to construct a filled concrete block which is provided with an outer covering so that the block can be placed in position before the cement casing is entirely set and the block thereby be enabled to conform to irregular surfaces.

A still further object is to construct a filled concrete block which can be used for revetment or levee work on river banks and the like, and which can be placed in position while still in a plastic state. The block however, is provided with a fabric covering which will prevent the washing away of the concrete.

In the drawings:—

Fig. 1 is a top plan view of a mold with portions broken away showing the same ready to receive concrete;

Fig. 2 is a cross sectional view taken on the line 2—2 of Fig. 1 showing the concrete and filler in position;

Fig. 3 is a reduced vertical section of my improved block and

Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 3.

In constructing my block I employ a mold comprising an inner cylindrical tubular casing 5. This casing is provided on its outer wall with ribs 6. These ribs extend radially and are for the purpose of spacing the reinforcing material, as will be hereinafter described. Secured to the casing 5 are spacing bars 7. These bars are secured near the upper edge of the casing 5. Secured to the outer end of the spacing bars 7 is a tubular member 8 which is concentric with the member 5 so as to leave an open space 9 between the inner wall of the casing 8 and the outer wall of the casing 5. The upper edge of the casing 8 is flared as at 10 so as to permit the ready introduction of concrete. The outer wall of the casing 8 is provided with a plurality of hooks 11, these hooks are preferably located just below the flared portion 10 and are for the purpose of supporting a fabric bag 12. The fabric bag 12 may be constructed of any suitable material such as burlap and the like.

It will be noted from Fig. 2 that the lower end 13 of the casing 5 is raised some distance above the lower end 14 of the casing 8. The casing 5 is also provided at its upper edge with rings 15, the purpose of which is to withdraw both casings when the pouring of the block has been completed.

In manufacturing a reinforced block the first step is to place reinforcing material 16 between the two casings. This reinforcing material may be either wire mesh, expanded metal or coiled wire as found preferable. The reinforcing material 16 is held in position by means of the ribs 6 which space it from the walls of the casings 5 and 8. After the reinforcing material has been placed in position, the bag 12 is drawn over the outside of the casing 8 and its upper end secured in position by means of the hooks 11. A certain amount of concrete cohesive mixture of cement and sand or similar material, either wet or dry is now poured into the casing 5 so as to form a bottom 17. After this has been done a body or core of non-cohesive material 19, such as sand, gravel, earth or a mixture thereof, is dumped into the casing 5 until a predetermined height has been reached. The side walls 18 of the block are then poured by filling in the space 9 which is formed between the casings 5 and 8, after which a top layer 20 of cohesive mixture is poured into the casing 5 so as to cover the top of the

filler. The bag 12 is then unhooked from the hooks 11 and both casings simultaneously removed by means of the eyes 15, the reinforcing material 16 of course, remaining imbedded in the side walls 18. All that remains to be done now is to draw the top of the bag together and secure the same by any suitable tying means, either string or wire. The bag is now ready to be placed in position while still in a plastic state so that it can readily conform to any irregularities of surface. The bag 12 however, retains the cohesive mixture around the filler while the reinforcing material 16 has a tendency to prevent undue strain being put on the bag by the filler or core within the cement casing.

It is obvious of course, that the shape of the casings 5 and 8 can be changed to suit various requirements. The length of these casings can also be varied for the same reason and in the event that a long block is manufactured, such as are employed in revetment work, it may be necessary to employ a power hoist to withdraw the casings from the block.

It may also be desirable before pouring the cohesive mixture to coat the casings with grease or other substances in order to prevent the adherence of the material and permit their ready withdrawal.

It may also be necessary in certain instances to reinforce both the bottom 17 and top 20. This can be readily done by inserting the reinforcing material into the casing 5 after the bottom 17 has been partially poured and reinforcing the top in the same manner.

It will be noted from the drawings that the sides when poured extend slightly above the top 20. The purpose of this is to allow the sides to overlap the top when the open end of the bag is being closed.

It is also my intention to remove the casing immediately after the piece of material has been placed therein because the fabric covering will hold the device in shape and retain the adhesive material in position. If found necessary when making large blocks, the bag may be reinforced by having wire netting or wire wrapped around the outside. By constructing blocks in this manner it is not necessary to have a great number of molds because two molds will be sufficient. While the one mold is being filled, the reinforcing material and the bag is placed over the other mold, and while the mold or casing is being withdrawn from the completed block the other casing is filled and the completed block is immediately ready for use, so that with two molds a continuous pouring operation is accomplished.

My device is especially applicable in levee work and in building revetments for the reason that a permanent job can be made without the use of building dams, caissons and the consequent high cost because my blocks can be built on a barge and then rolled off into the water, where due to their plastic state they readily conform to the contour of the bank, and the fabric covering prevents the cement washing away while setting.

Another important feature of my device is the saving in cost of material due to the fact that the center of the block is filled with loose gravel, rock or sand and in fact any material which may be readily dredged directly from the river and placed within the casing.

Having fully described my invention, what I claim is:—

1. The method of making concrete blocks for levee and revetment work, which consists in taking a fabric bag open at one end and holding the same in a distended form throughout its length, placing a layer of self-hardening plastic material in the bottom of said bag, placing a confined loose non-plastic mass on said layer of self-hardening plastic material in such a position as to be free from contact with the sides of the bag, filling the space between the loose mass and the bag with a body of plastic self-hardening material, releasing the loose non-plastic material from its confinement, placing a layer of plastic self-hardening material on the loose mass, and, lastly, securing the open end of the bag in closed position.

2. The method of making concrete blocks for levee and revetment work, which consists in taking a fabric bag open at one end and holding the same in a distended form throughout its length, placing a layer of self-hardening plastic material in the bottom of said bag, placing a confined loose non-plastic mass on said layer of self-hardening plastic material in such a position as to be free from contact with the sides of the bag, filling the space between the loose mass and the bag with a body of plastic self-hardening material, placing a layer of plastic self-hardening material on the loose mass, releasing the loose non-plastic material from its confinement, and, lastly, securing the open end of the bag in closed position.

3. A filled concrete block comprising a central body composed of non-cohesive material, a layer of dry material surrounding said central body, which layer will become cohesive and self-hardening on being subjected to moisture, and flexible non-removable means for maintaining said dry material in position around said central body.

4. A filled concrete block comprising a central body composed of non-cohesive material, a layer of dry material surrounding said central body, which layer will become cohesive and self-hardening on being subjected to moisture, reinforcing fabric located in said layer, and means for maintaining said dry material in position around said central body.

5. A filled concrete block comprising a central body, a layer of dry material of prede-

termined thickness surrounding said central body, said layer adapted to become self-hardening after being subjected to moisture, and a non-removable fabric casing for retaining said dry material in position.

6. A filled concrete block comprising a central body, a layer of dry material of predetermined thickness surrounding said central body, said layer adapted to become self-hardening after being subjected to moisture, reinforcing material located in said layer of dry material, and a fabric casing for retaining said dry material in position.

7. The method of making concrete blocks for levee and revetment work, which consists in taking a fabric bag open at one end and holding the same in a distended form throughout its length, placing a layer of self-hardening dry material in the bottom of said bag, placing a confined loose non-plastic mass on said layer of self-hardening dry material in such a position as to be free from contact with the sides of the bag, filling the space between the loose mass and the bag with a body of dry self-hardening material, releasing the loose non-plastic material from its confinement, placing a layer of dry self-hardening material on the loose mass, and, lastly, securing the open end of the bag in closed position.

8. The method of making concrete blocks for levee and revetment work, which consists in taking a fabric bag open at one end and holding the same in a distended form throughout its length, placing a layer of self-hardening dry material in the bottom of said bag, placing a confined loose non-plastic mass on said layer of self-hardening dry material in such a position as to be free from contact with the sides of the bag, filling the space between the loose mass and the bag with a body of dry self-hardening material, placing a layer of dry self-hardening material on the loose mass, releasing the loose non-plastic material from its confinement, and, lastly, securing the open end of the bag in closed position.

9. The method of making concrete blocks for levee and revetment work, which consists in taking a reinforced fabric bag open at one end and holding the same in a distended form throughout its length, placing a layer of self-hardening plastic material in the bottom of said bag, placing a confined loose non-plastic mass on said layer of self-hardening plastic material in such a position as to be free from contact with the sides of the bag, filling the space between the loose mass and the bag with a body of plastic self-hardening material, releasing the loose non-plastic material from its confinement, placing a layer of plastic self-hardening material on the loose mass, and, lastly, securing the open end of the bag in closed position.

10. A filled concrete block comprising a central body composed of non-cohesive material, a layer of dry material surrounding said central body, which layer will become cohesive and self-hardening on being subjected to moisture, and reinforced flexible fabric means for maintaining said dry material in position around said central body.

In testimony whereof I have affixed my signature.

JOHN A. DE VILBISS.