

PATENT SPECIFICATION

(11) 1 344 995

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- (21) Application No. 52013/70 (22) Filed 2 Nov. 1970
 (23) Complete Specification filed 27 Oct. 1971
 (44) Complete Specification published 23 Jan. 1974
 (51) International Classification E04C 1/10
 (52) Index at acceptance
 E1B 1A3B 1C4B 1F2X 1G2B 1G2D 4C4C 4F2X 4F6C 4GX
 B5A 1R50 1R55
 E1H 12
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(54) MASONRY BLOCK

(71) We, DYTAP CONSTRUCTION HOLDINGS LIMITED, a British Company, of 17, Paul Street, Taunton, Somerset, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a masonry block and is particularly applicable to the construction of revetments for the protection of river banks from erosion.

A conventional method of forming masonry revetments using stone laid dry, grouted or set in cement or mortar is increasingly becoming a non-viable proposition because of the rising cost of skilled labour and the cost and availability of stone of suitable size.

According to the invention there is provided a moulded masonry block having a natural stone set in it to form a raised portion of a front face of the block and in which side faces of the block have U-shaped or V-shaped raised and/or depressed portions which extend to the front face and are arranged to engage complementary portions of adjacent blocks to form an interfitting structure.

The natural stone(s) set in the front face of the block are intended to simulate the attractive appearance of conventional revetments.

The U-shaped or V-shaped of the depressed and/or raised portions is considered to be conducive to strength, satisfactory transmission of sheer forces between adjacent blocks, and ease of assembly and manufacture. For the avoidance of doubt, the term U-shaped is to be construed as being limited to a curved shape and is not intended to cover a generally rectangular lug or recess. The latter would be entirely unsuitable since in the assembled structure the lugs might break off. Also blocks with rectangular lugs would be relatively difficult to manufacture and to assemble. Generally the V-shape is considered to give

[Price 25p]

the best force transmission characteristics, and preferably forms an angle within the range 140° to 90° inclusive.

Because the raised and/or depressed portions extend to the front face it will be seen that in the particular embodiments to be described the assembled structure does not show harsh straight joint lines which, if present might be out of keeping with the surroundings. Preferably the raised and/or depressed portions extend from the front to the rear face this being advantageous from the viewpoints of sheer force transmission and ease of manufacture.

Another preferred feature is for the raised and/or depressed portions on opposite sides of the block to be inversions one of the other in order that the block should not experience any turning movement when subjected to forces during movements of the underlying ground structure.

Also according to the invention there is provided a system of interfitting masonry blocks as aforementioned. The interfitting blocks may be laid dry or jointed with cement or mortar or similar material.

Also according to the invention there is provided a method of casting blocks as aforementioned, in which liquid or semi-liquid masonry material is introduced to a multiple mould comprising a matrix of cells divided from each other by strips, the strips having bends each of which forms a raised portion of one block on one side of the strip and a similarly shaped depressed portion of another block on the other side of the strip; and in which natural stones are set in position preferably by hand after introducing the masonry material into the mould.

Particular embodiments of the invention and a method for the manufacture of one of them will now be described by way of example with reference to the accompanying drawings in which:—

Fig. 1 is a perspective view of one block constructed in accordance with the invention;

Figs. 2 to 10 are front elevations of nine

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different blocks constructed in accordance with the invention;

Fig. 11 shows one possible arrangement in which blocks similar to those shown in some of the previous Figures can be fitted together;

Fig. 12 shows a mould for making blocks like that shown in Fig. 1; and

Fig. 13 is a detail of a slotted intersection between two strips shown in Fig. 12.

The block shown in Fig. 1 comprises a number of pieces 1 of unmachined decorative stone set randomly in concrete 2 which is moulded into the general shape of a parallelepiped with rectangular faces. The front and rear faces, which are parallel, are twice as long as they are broad and the dimensions of the block are 450 mms. x 225 mms. x 100 mms. The four side faces of the block have "V" shaped depressed portions 3 and raised portions 4, the shape of the latter being an exact inversion of the former. The depressed and raised portions all extend from the front face to the rear face. A depressed portion 3 or a raised portion 4 is positioned centrally on each of the two shorter side faces, and also centrally on each half of the longer side faces. This enables a number of identical blocks to be fitted together to form a variety of different arrays. In this particular embodiment the decorative stone appears only on the front face of the block but for some purposes it may of course be desirable to have it on front and rear faces.

The blocks shown in Fig. 2 is similar to that of Figure 1 but has front and rear faces in the form of non-rectangular parallelograms.

The blocks shown in Figs. 3 and 4 are respectively intended for the corners and edges of a panel formed of interfitted blocks of the type shown in Figure 1.

Figures 5, 6, 7 and 8 show other blocks constructed in accordance with the invention. These blocks are each characterised in that they must be used in conjunction with blocks of a different type in order to form an interfitting system.

Figure 9 shows a block similar to that of Figure 1 but its two longer edge faces 5 are chamfered so that the block can conveniently be used to form a transition where the top of a revetment slope joins a level area. Similarly the block of Figure 10 has chamfered edges 6 so that it can be used where a bottom of a slope joins a level area.

The interfitting system shown in Fig. 11 utilises all the blocks shown in Figs. 1, 3, 4 and 6.

Turning now to Fig. 12 there is shown a multiple mould assembly for making blocks like that shown in Fig. 1. The assembly consists of a set of parallel strips B1 and B2 slotted in criss-cross fashion with a second

set of similar strips A1. In this particular construction the strips are made of steel but in alternative arrangements they could be made of wood, glass fibre reinforced plastics or any other suitable material.

The strips are assembled together on a suitable flat casting bed and liquid concrete is placed into a matrix of individual cells formed between the strips. Each strip is bent at regular intervals as shown in Fig. 12 so that any one bend forms a raised portion on a block being cast on one side of the strip and a depressed portion on the block being cast on the other side of the strip. The mould is filled with concrete to a level just below the top of the strips and vibrated to achieve compaction. Natural stones which have previously been selected for colour, size and shape are then set by hand into the concrete material in such a manner that the stones are firmly embedded within the concrete and present a clean well defined decorative face with the desired amount of projection from the concrete.

After the concrete has hardened sufficiently the steel strips are removed by lifting vertically, leaving the blocks on the casting bed for further hardening and curing. Meanwhile the mould can be re-assembled and used for casting a further set of blocks. This gives considerable economy in the mould cost per block.

The particular blocks which have been described enable revetments to be constructed on a slope of any steepness using unskilled labour and with a remarkable saving of time compared with conventional methods. Application of the invention is not however limited to the construction of revetments.

WHAT WE CLAIM IS:—

1. A moulded masonry block having a natural stone set in it to form a raised portion of a front face of the block and in which side faces of the block have U-shaped or V-shaped raised and/or depressed portions which extend to the front face and are arranged to engage complementary portions of adjacent blocks to form an interfitting structure.

2. A block according to claim 1 in which each raised and/or depressed portion extends to a rear face.

3. A block according to any preceding claim in which two opposite sides of the block are inversions, one of the other.

4. A block according to claim 3 in which the front face is generally rectangular, being approximately twice as long as it is broad, one square shaped half of the rectangle having a raised portion centrally located in each of three sides; and the other square-shaped half having a depressed portion centrally located on each of three sides.

different blocks constructed in accordance with the invention;

Fig. 11 shows one possible arrangement in which blocks similar to those shown in some of the previous Figures can be fitted together;

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Fig. 13 is a detail of a slotted intersection between two strips shown in Fig. 12.

The block shown in Fig. 1 comprises a number of pieces 1 of unmachined decorative stone set randomly in concrete 2 which is moulded into the general shape of a parallelepiped with rectangular faces. The front and rear faces, which are parallel, are twice as long as they are broad and the dimensions of the block are 450 mms. x 225 mms. x 100 mms. The four side faces of the block have "V" shaped depressed portions 3 and raised portions 4, the shape of the latter being an exact inversion of the former. The depressed and raised portions all extend from the front face to the rear face. A depressed portion 3 or a raised portion 4 is positioned centrally on each of the two shorter side faces, and also centrally on each half of the longer side faces. This enables a number of identical blocks to be fitted together to form a variety of different arrays. In this particular embodiment the decorative stone appears only on the front face of the block but for some purposes it may of course be desirable to have it on front and rear faces.

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After the concrete has hardened sufficiently the steel strips are removed by lifting vertically, leaving the blocks on the casting bed for further hardening and curing. Meanwhile the mould can be re-assembled and used for casting a further set of blocks. This gives considerable economy in the mould cost per block.

The particular blocks which have been described enable revetments to be constructed on a slope of any steepness using unskilled labour and with a remarkable saving of time compared with conventional methods. Application of the invention is not however limited to the construction of revetments.

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2. A block according to claim 1 in which each raised and/or depressed portion extends to a rear face.

3. A block according to any preceding claim in which two opposite sides of the block are inversions, one of the other.

4. A block according to claim 3 in which the front face is generally rectangular, being approximately twice as long as it is broad, one square shaped half of the rectangle having a raised portion centrally located in each of three sides; and the other square-shaped half having a depressed portion centrally located on each of three sides.



5. A block according to any preceding claim in which the said portions are all V-shaped.
- 5 6. A block substantially as described with reference to Fig. 1 of the accompanying drawings.
7. A block substantially as described with reference to Fig. 2 of the accompanying drawings.
- 10 8. A system of interfitting masonry blocks each constructed in accordance with claim 1.
- 15 9. A method of casting blocks as defined in any of claims 1 to 8 in which liquid or semi-liquid masonry material is introduced to a multiple mould comprising a matrix of cells divided from each other by strips, the strips having bends each of which forms a raised portion of one block on one side of
- 20 the strip and a similarly shaped depressed portion of another block on the other side of the strip; and in which natural stones are set in position after introducing the masonry material into the mould.
10. A method according to claim 9 including the step of making the mould by slotting together a first set of parallel strips in criss-cross fashion with a second set of parallel strips.
- 25 11. A method of manufacturing blocks according to claim 9 and substantially as described with reference to Figs. 12 and 13 of the accompanying drawings.
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Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1974.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from
which copies may be obtained.

