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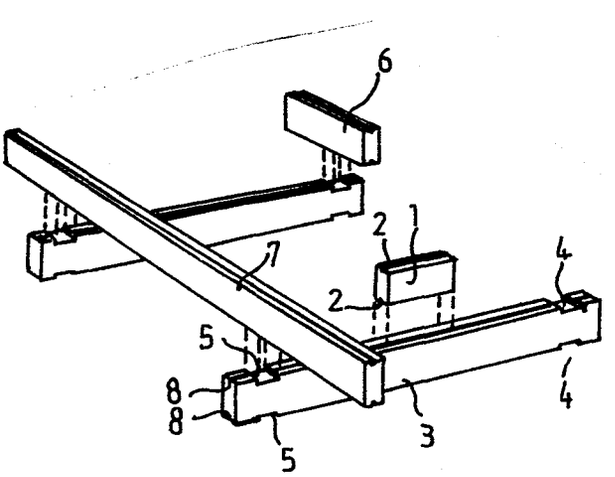
(54) Improvements in and/or relating to cribwalling.

(57) A cribwall comprising
(A) a skeletal wall structure made up of components such that there is
(i) a plurality of tiers of headers each substantially normal to the general plane of the wall, each having front and rear end rebates top and bottom, and with each header of one tier being above and/or below a header of an adjacent header,
(ii) wall wise extending stretcher each of which spans at least two headers of a tier and the corresponding at least two headers of an adjacent tier and is located between the tiers by the said front end top and bottom rebates of the proximate headers,
(iii) rear end header spacing means selected from wall-wise extending stretchers of keys which are interposed between each pair of adjacent tiered headers and are located by said rear top and bottom rebates thereof, and
(iv) header support blocks interposed between at least some of the tiered headers between a stretcher and the rear end header spacing means so as to enhance the load carrying capability of the resultant structure, and
(B) fill material at least substantially filling said skeletal wall structure.

The invention also consists in a header for a cribwall including header support blocks, said header formed in wood of substantially rectangular cross-section and having top and bottom (i) a lenghtwise extending groove and (ii) rebates adjacent each end that extend fully across the transverse section.



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IMPROVEMENTS IN AND/OR RELATING TO CRIBWALLING

The present invention relates to improvements in and/or relating to crib walls and in particular although not solely to crib walls made from timber components.

In our New Zealand patent application No. 195408 (corresponding to Australian patent application No. 76710/81) there is disclosed a header support block and various crib wall component combinations including such header support blocks which enable the cheaper erection of a crib wall and also enable such crib wall to be built to greater heights than would otherwise be the case. Such a header support block however is in the form of a substantially rectanguloid wooden block having a pair of opposed rebates or checks (hereafter "rebates") to enable the same to be located between two vertically adjacent headers in part straddling with each rebate one of said two vertically adjacent headers at any suitable position along the length thereof.

Such double rebated key blocks are difficult to manufacture as is evident from such specifications. They also provide with a particular volume of timber only a certain amount of support between vertically adjacent headers. Moreover their straddling arrangement makes it easy for them to become displaced during the filling operation where back-fill or other fill is dropped into an at least partially erected crib wall structure. There is therefore some need whereby an improved header, header support block or alternative arrangement can be provided which will go at least some way to meeting some of the above mentioned desiderata which will at least provide the public with a useful choice.

Accordingly one aspect the present invention consists in a header for a cribwall including header support blocks, said header being formed with a substantially retangular cross section and having top and bottom (i) a lengthwise extending groove and (ii) rebates in the form of checks adjacent each end that extend fully across the transverse section and interupt at least to some degree said grooves.

The term "header support block" as used herein refers to a block capable of being positioned between a front stretcher and a rear end

header spacing means so as to enhance the load carrying capability of the resultant structure. While it obviously serves to some extent a spacing function as it takes up load, its positioning is not essential to ensure under light load, the correct spacing of the tiered headers.

Preferably the header is formed in wood.

Preferably the header is of a configuration substantially as hereinafter described

In a further aspect the present invention consists in a cribwall comprising:

(A) a skeletal structure made up of components such that there is (i) a plurality of tiers of headers in accordance with the present invention, each substantially normal to the general plane of the wall, with each header of one tier being above and/or below a header, (ii) wall wise extending stretchers each of which spans at least two headers of tier and the corresponding at least two headers of an adjacent tier and is located between the tiers by the said front end and bottom rebates of the proximate headers, (iii) rear end header spacing means selected from wallwise extending stretchers or keys which are interposed between each pair of adjacent tiered headers and are located by said rear top and bottom rebates thereof, and

Preferably stretchers are provided to seperate the tiered pairs of headers both front and rear.

Preferably all components of the skeletal wall structure are formed in wood.

In a aspect the present invention consists in a pack components of a skeletal wall structure of a cribwall in accordance with the present invention.

One preferred form of the present invention will now be described with reference to the accompanying drawings in which

Figure 1 is an exploded view showing the preferred form of the components in accordance with the present invention and the manner in which the preferred headers and header support blocks can be located and used in conjunction with other components such as stretchers and keyblocks,

Figure 2 is an end view of one form of crib wall formed using components in accordance with the present invention,

Figure 3 is a perspective view of a skeletal wall accordance with the present invention being errected on a supporting bed and showing headers in accordance with the present invention and header support blocks being positioned, and

Figure 4 is an end elevation view of a retaining wall in accordance with the present invention showing by way off example a structure having a maximum height above ground level of 6.276 metres using headers 1375 milimetres long spaced at 550 milimetre centres, there being shown how when designing the wall down from the top there are three stages i.e. no header support block for each header, one header support block per header and two support blocks per header.

With the use of the components of the present invention it is possible per given volume of component material to achieve greater crib wall heights over those given in the said New Zealand Patent Specification No.195408. In the preferred form of the present invention the header support blocks 1 are substantially rectanguloid but include longitudinally extending therealong an easily machineable locating ridge, tongue or other profile 2. Indeed if desired there can be a plurality of locating means which preferably axially extend. Ideally the locating means extend axially so that mass production is facilitated. With a timber form (which is the preferred form) the grain of all the components extends longitudinally of the component.

The preferred header 3 is preferably a conventional header having two pairs of rebates 4 and 5, the rebates 4 being adapted to receive a keyblock 6 and a stretcher 7 respectively. The header 3 includes top and bottom a header support block locating means 8 which is preferably a groove (preferably a square channel) in to which the means

2 can locate the keyblock 1 so as to align longitudinally with vertically adjacent headers 3. Obviously in other forms of the present invention different complementary locating means can be provided between headers and header support blocks and indeed if desired such means need not be symmetrical. The preferred form however is desirable as it lends itself to easy mass production. For example, the grooves 8 are shown as being common to the stretcher and the keyblock since it is possible with the present invention to machine all such components using the same shaping machinery. Only the header support block need be manufactured with the machines set differently.

It is essential to ensure a adequate footing of a crib wall in accordance with the presence inveniton irrespective of whether or not it is to act as a retaining wall or as a facing wall. Facing walls are appropriate where the bank to be retained is inherently stable. A facing wall in such a circumstance provides protection hence scour and weathering.

The preferred length of header in a system in accordance with the present invention would be selected from 550, 733, 825, 1100, 1375 mm. The headers have a cross section of 92 by 46 mm and are preferrably formed in chemically treated Pinus Radiata.

Figure 4 shows an end view of a wall built to a height of 6.1276 metres above ground level using headers 1375mm long spaced at 550 mm centres. The diagrams shows the number of header support blocks per header (HSB/H) as varying from none to one to two depending of the depth of the overall wall structure.

Figure 4 also shows the angle of surcharge 0 (0°, 10°, 20°, or 38°). A retaining wall is considered to be surcharged by any load of back fill material or retained ground above a horizantal plane projected behind and level with the top of the wall for a distance equal to the hieght of the wall. The angle of internal fiction 0 (25°, 30°, 35°, 40°) is a measure of the fictional resistance to shear between the soil particales and shape as well as soil densinty the finer the partical size the lower the angle of fiction. Clay and silt have lower angles of ficton than gravels.

With the angle of surcharge β and angle of internal fiction 0 thus defined an indication of the desired positioning and number of header support blocks per header can be read from Table I.

TABLE 1

Header length mm Cross section mm	β degrees	/ ' 25°	30°	35°	40°	Distance form the top of the wall below which any stated number of header blocks are required per header (HSB/H) 0	1	2	FACING WALLS.	Distance from the top of the wall which header support blocks are required per header (HSB/H) 0	1	2
		LANDSCAPING WALLS										
HEADER 550 mm 92mm x 36mm	0	1.80	2.00	2.00	2.00				2.00			
	20	1.60	1.80	2.00	2.00							
		RETAINING WALLS										
HEADER 733 mm 92mm x 36mm	0	2.25	2.60	3.15	3.65		1.70	3.65	5.50		1.70	4.30
	10	2.05	2.45	2.90	3.45							
	20	1.80	2.20	2.70	3.25							
	30	-	-	2.30	2.90							
	38	-	-	-	2.35							
HEADER 852 mm 92mm x 36mm	0	2.55	2.95	3.55	4.10		2.50	4.10	6.30		2.50	6.30
	10	2.30	2.80	3.25	3.90							
	20	2.00	2.50	3.10	3.65							
	30	-	-	2.55	3.25							
	38	-	-	-	2.65							
HEADER 1100 mm 92mm x 46mm	0	3.55	4.15	4.90	5.75		1.80	5.75	6.30		1.80	5.20
	10	3.25	3.90	4.55	5.50							
	20	2.80	3.50	4.25	5.10							
	30	-	-	3.60	4.55							
	38	-	-	-	3.70							
HEADER 1375 mm 92mm x 46mm	0	4.55	5.30	6.30	6.30		1.50	4.20				
	10	4.15	5.00	5.80	6.30							
	20	3.55	4.40	5.50	6.30							
	30	-	-	4.60	5.85							
	38	-	-	-	4.75							

The back fill within the wall itself should be crushed quarried rock that will not break down under weathering, of sufficient stone size to be free draining with out washing out of the wall face, but small enough not to damage or displace timber components. Well graded material (containing a good mix of intermediate sizes) between 20mm and 100mm stone size is considered ideal.

CLAIMS

1. A header for a cribwall including header support blocks as hereinbefore defined said header being formed with substantially rectangular cross-section and having top and bottom (i) a lengthwise extending groove and (ii) rebates adjacent each end that extend fully across the transverse section and interrupt at least to some degree said grooves.

2. A header as claimed in claim 1 substantially as hereinbefore described with reference to the accompanying drawings.

3. A cribwall comprising

(A) a skeletal wall structure made up of components such that there is (i) a plurality of tiers of headers as claimed in claim 1 or 2 each substantially normal to the general plane of the wall, with each header of one tier being above and/or below a header,

(ii) wall wise extending stretchers each of which spans at least two headers of tier and the corresponding at least two headers of an adjacent tier and is located between the tiers by the said front end and bottom rebates of the proximate headers,

(iii) rear end header spacing means selected from wallwise extending stretchers or keys which are interposed between each pair of adjacent tiered headers and are located by said rear top and bottom rebates thereof, and

(iv) header support blocks interposed between at least some of the tiered headers between a stretcher and the rear end header spacing means so as to enhance the load carrying capability of the resultant structure, said header support blocks having top and bottom projecting means each to engage in the groove of each sandwiching header, and

(B) fill material at least substantially filling said skeletal wall structure.

4. The cribwall as claimed in claim 3 wherein stretchers are provided to separate the tiered pairs of headers both front and rear,

5. A cribwall as claimed in claim 3 or 4 wherein all components of the skeletal wall structure are formed in wood.

6. A cribwall as claimed in claim 3 or 4 wherein all of the components of said skeletal wall structure are substantially as herein-

before described with reference to the accompanying drawings.

7. A cribwall substantially as hereinbefore described with reference to any of the accompanying drawings

8. In a pack components of a skeletal wall structure of a cribwall as claimed in any one of claims 3 to 7.

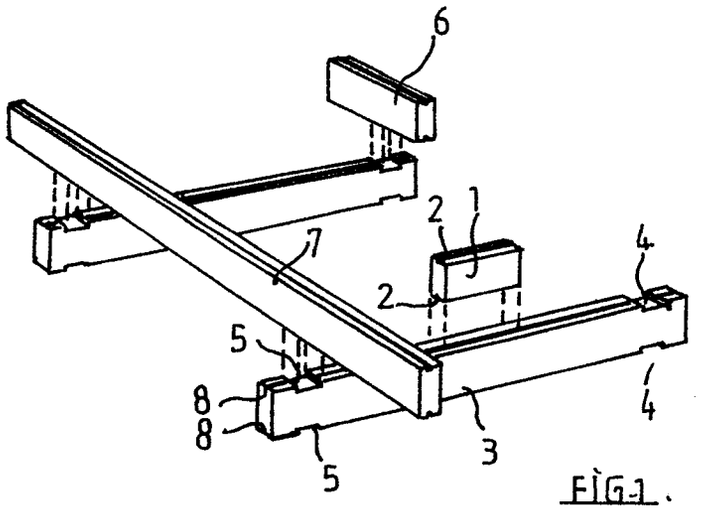

FIG.1.

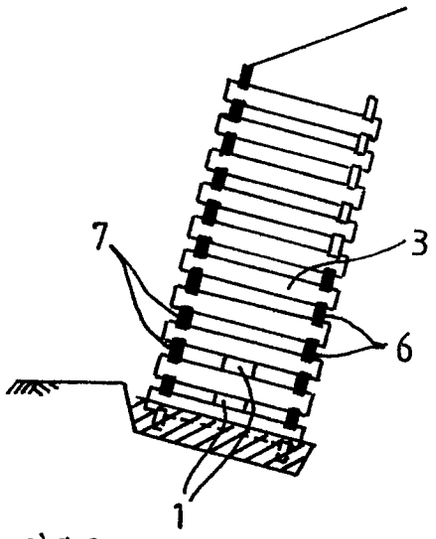

FIG.2.

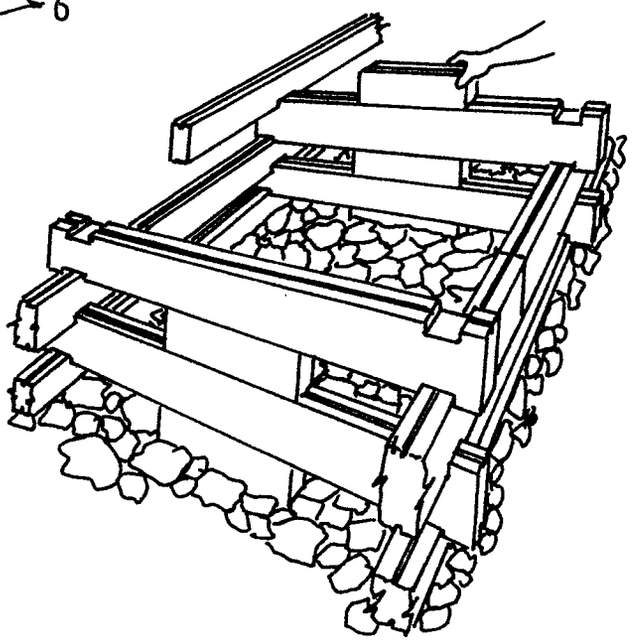

FIG.3.

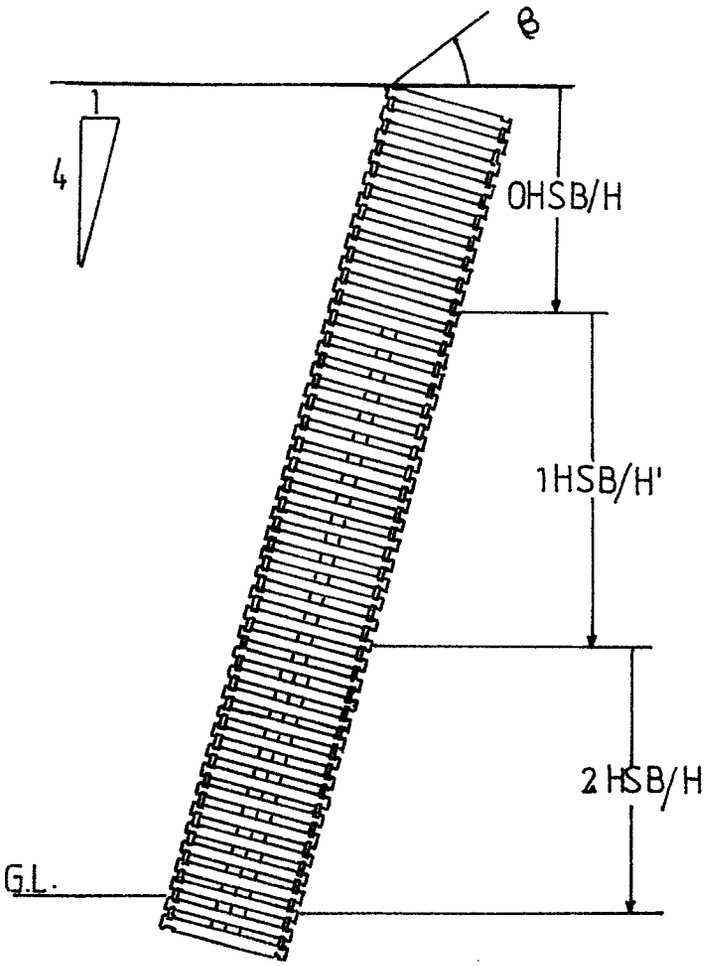

FIG 4