

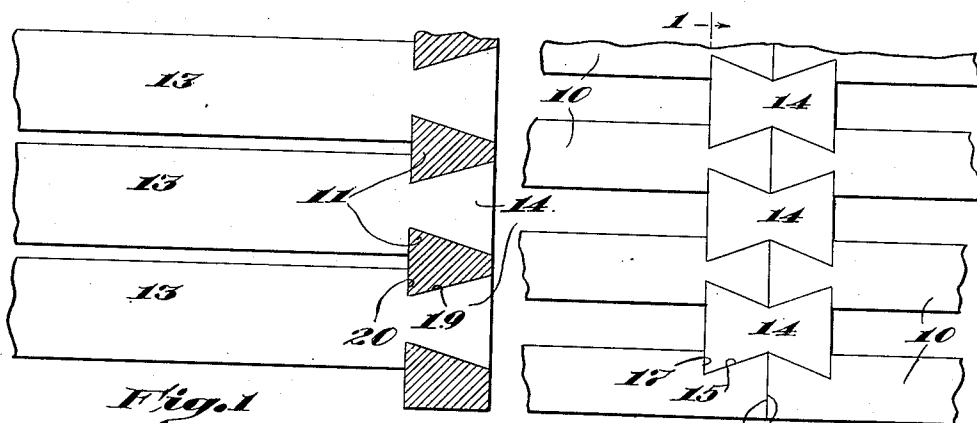
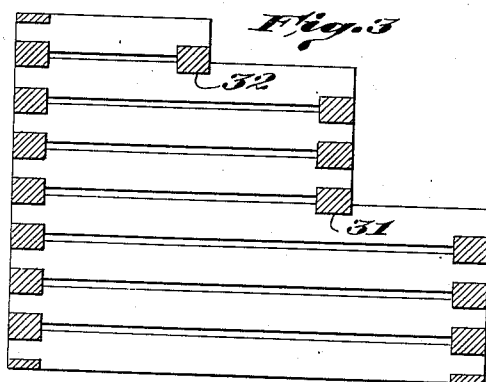
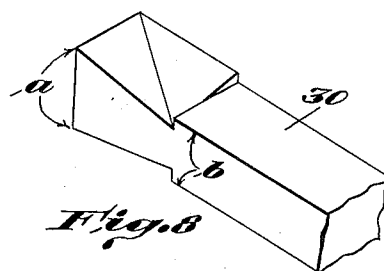
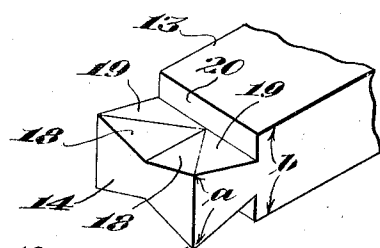
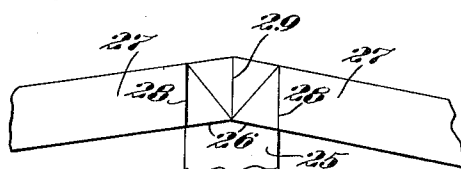
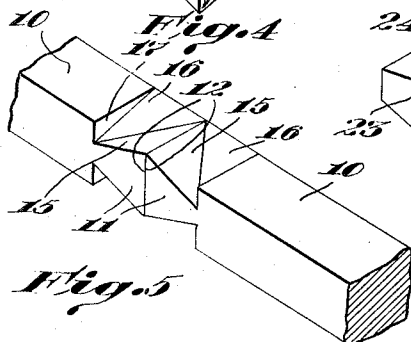
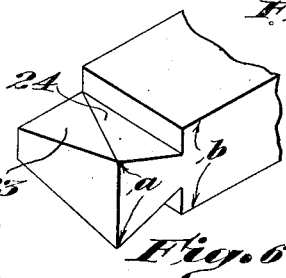
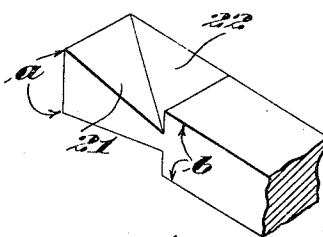
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J. B. RUTTER

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CRIBBING

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UNITED STATES PATENT OFFICE

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CRIBBING

Application filed February 13, 1928. Serial No. 253,819.

This invention relates to cribbing for use in constructing temporary or permanent retaining walls, foundations, abutments, coffer-dams, bins, dykes, dams, breakwaters, sea-walls or the like, and is especially concerned with the provision of cribbing consisting of a plurality of interfitting members which may be economically manufactured, readily transported from place to place, and easily erected or dismantled with a minimum of labor.

The principal objects of the invention are to provide a cribbing structure which comprises a few dissimilar parts, each common element being interchangeable and reversible end to end; which consists of a plurality of stretchers arranged in tiers and constituting the face or faces of the assembled structure, and a plurality of headers arranged in parallel tiers substantially at right angles to the stretchers and adapted to interlock therewith, so that the ends of the headers and the outer faces of the stretchers all lie in substantially the same plane and thus present a flush external surface; and especially to provide an interfitting joint between the abutting faces of the respective members so constructed and arranged as to provide a positive lock in four directions, whereby the respective members are effectively retained in interlocked relation by the weight of the superposed elements and are secured against accidental displacement, except by an upward component of pressure exceeding the gravitational pressure of said superposed elements. Further objects reside in the advantageous features of construction herein described and pointed out in the appended claims.

Recommended embodiments of the invention as shown for the purpose of illustration in the accompanying drawings, in which:

Fig. 1 is a sectional view taken on the line 1—1 of Fig. 2, showing the headers in side elevation;

Fig. 2 is a front elevation of a portion of the improved cribbing;

Fig. 3 is a section through the cribbing, illustrating an optional type of structure in which the effective length of the headers is

decreased in progressive steps from the bottom of the cribbing upwardly;

Fig. 4 is a perspective view of the end of a representative header;

Fig. 5 is a similar view of the complementary joint formed by the abutting ends of a pair of stretchers;

Figs. 6 and 7 are perspective views of the end of a header and stretcher, respectively, showing a modified form of interlocking joint adapted for use at a right-angled corner of the cribbing;

Fig. 8 shows a further modification in the construction of a stretcher joint; and

Fig. 9 is a plan view of an optional joint at a corner greater than a right angle.

The cribbing members may be cast or molded of any suitable structural material such as plain or reinforced concrete, steel, iron, or made of wood, and the common units may be made substantially identical in size and shape in order to lessen the cost of manufacture and permit interchangeability thereof. For some purposes all of the headers and stretchers, respectively, may be identical and a satisfactory cribbing structure may be erected at slight cost of material and labor when only these respective elements are dissimilar. In order to eliminate corner projections and to provide a structure of enhanced appearance, the joint construction of the members employed at the corners of the cribbing may, however, be modified and the bottom and top members of the structure may have unbroken outer surfaces, if desired.

In the structure shown in Figs. 1, 2, 4 and 5 of the drawings, the stretchers 10 are erected in line and are provided with tongues 11 having plane end faces 12 abutting each other; and the headers 13 are erected at right angles to the line of stretchers and are alternately arranged between successive stretcher rows. The headers have end tongues 14 adapted to interfit with each abutting pair of stretcher tongues 11, with the outer end of tongues 14 terminating flush with the outer faces of the stretchers. The respective tongues of the stretchers and headers have their meeting faces so arranged as

to furnish an interfitting joint adapted securely to lock said members against relative movement in four horizontal directions, thereby effectively resisting all external forces which would tend to displace the assembled cribbing, except a vertical component of force in excess of the downward pressure exerted by such of the members as may be above the point at which said vertical pressure is applied. Ordinarily the weight of the superposed members will be sufficient to overcome such vertical component, but the upper tiers of the assembled structure may be further secured, if desired, by bolts, straps or other devices in an obvious manner.

As shown in the drawings, the respective upper and lower surfaces of the stretcher tongues 11 have a pair of contiguous faces 15 and 16 beveled toward each other in a downward direction. These beveled faces extend from the end and side, respectively of each tongue, and thus form an inner, vertical wall or face 17 parallel to the end face of the tongue and of triangular shape (Fig. 5). The tongues are identically formed at each end of the stretcher units, so that these members are interchangeable and may be reversed end to end.

The tongues 14 of the headers have their upper and lower surfaces similarly shaped to correspond with the beveled faces of a pair of abutting stretcher tongues. In this case two pairs of contiguous faces 18 and 19 are provided, each pair being beveled at an angle to each other and inclining downwardly from the respective outer corners of the tongue 14, to provide an inner vertical wall 20 parallel to the end face of the tongue and rectangular in shape.

When the tongues of Figs. 4 and 5 are placed together (as in Figs. 1 and 2) the complementary beveled faces interfit; the end walls 17 of the stretcher tongues abut their respective sides of the header tongues; and the end wall 20 of the header tongue abuts the inner side of the stretcher tongues. The unique four-way locking joint is thus effected in a simple manner, without excessively undercutting the surfaces of the tongues. The beveled faces are thus less likely to be broken off, but if one projection should be knocked off, the other interfitting portion of the dovetailed joint serves to hold the parts together.

If it is desired to form a right-angled corner in the assembled cribbing with flush outer surfaces, the header tongues may be formed as shown in Fig. 6, with only one pair of beveled faces; while the stretcher tongue may be lengthened as illustrated in Fig. 7 to join and register with the header tongue. The complementary beveled faces 21, 22 of the stretcher tongue and 23, 24 of the header tongue are formed as before. To form obtuse-angled corners; the joints may be formed

substantially as in Figs. 4 and 5, although the vertical walls at the inner ends of the tongues and the abutting ends of the stretcher units should be cut diagonally. Such a joint is illustrated in Fig. 9, in which inner tongue wall of the header 25 is formed with a pair of vertical faces 26 inclined rearwardly from the center; the walls of the stretchers 27 have a corresponding inclination, as at 28; and the abutting ends of the stretcher tongues meet at the diagonal 29.

The stretchers of the assembled cribbing are ordinarily spaced apart to permit proper drainage therebetween when the cribbing is filled with stone, sand, gravel or similar material, and it is obvious that the width of the openings may be varied as desired by increasing or decreasing the vertical thickness of the header and/or stretcher tongues. For example, in the header of Fig. 4, the greatest vertical dimension a of the tongue is less than the vertical thickness b of the header; in Figs. 6 and 7 the dimensions a and b of the headers and stretcher are the same; while in Fig. 8 the tongue thickness a is greater than the thickness b , of the stretcher 30. The spaces between the stretchers may be further increased, if necessary, by providing recesses in the top and bottom faces of the stretcher units; and it is recommended that the horizontal sides of the headers be so cut away in order to decrease their weight.

The intervals between stretchers are preferably so arranged that the filling material within the cribbing, assuming its natural angle of repose, will come to rest on the upper surfaces of the several stretchers. The weight of this material on the stretchers accordingly assists in overcoming any vertical pressure component which might tend to lift the superposed stretchers and thereby open the joint. If, however, the cribbing is to be employed as a bin, said openings may be decreased or entirely closed by decreasing the thickness of the tongues.

In order to provide a high cribbing requiring a deeper base than usual, the headers may be lengthened on the bottom courses and the depth of the cribbing may gradually be decreased by providing cut-in joints remote from the ends of the headers in one row, to receive the tongues of the next row of stretchers, as at 31, 32 in Fig. 3. The same result may be attained by providing removable adapter pieces (not shown) having their top surfaces beveled to receive the stretcher tongues of the next row.

A cribbing constructed as above described may be erected with ease, readily dismantled, transported to another location, and re-erected with a minimum of labor and at no additional cost for material. The individual units are preferably so made that they may be conveniently carried by two men, and most

of the units are interchangeable. Because of the unique four-way locking joint, any external pressure from the front, rear or sides of the cribbing must be sufficient to move the entire structure before any member is moved, and the units can not be displaced except by the excessive vertical pressure mentioned above. It will be understood, however, that the structural details of the cribbing may be varied to suit particular purposes without departing from the essence of this invention as defined in the appended claims.

I claim:

1. In a structure comprising a plurality of separable units having their ends alternately overlapping, an interlocking joint at said ends adapted to restrain relative movement therebetween in two dimensions, and consisting of inter-fitting faces including a pair of faces inclined to each other and a third face disposed in a plane oblique to said inclined faces and meeting along a line oblique to both of said dimensions, said three faces being arranged upon the same side of each interfitting end.

2. In a cribbing comprising a plurality of members arranged in a tier and a plurality of other members arranged in a second tier, an interlocking joint between the respective ends of the respective members consisting of interfitting surfaces, each of which has a pair of faces beveled at an angle to each other and meeting along a line oblique to all sides of the respective members, and a wall disposed in a plane oblique to either of said beveled faces, there being a corresponding surface on the opposite sides of each interfitting end.

3. In a cribbing comprising a plurality of elongate members arranged in a tier and a plurality of other elongate members arranged in a second tier, an interlocking joint between the respective ends of the respective members consisting of interfitting surfaces, each of which has a pair of contiguous faces adjacent the end of the member, said faces being beveled at an angle to each other and meeting along a line oblique to all sides of the member, and a wall remote from said end disposed in a plane oblique to either of said faces.

4. A cribbing comprising a vertical tier of stretchers consisting of a plurality of separate elongate units, and a vertical tier of headers arranged at an angle to the stretcher tier and consisting of a plurality of separate elongate units, the stretcher units alternating with the header units and the ends of said units having interlocking tongues, said tongues having interfitting surfaces, including a pair of faces on one side beveled at an angle to each other and meeting along a line oblique to all sides of the unit, constituting

a joint adapted to secure said ends together against relative movement in four horizontal directions.

5. A cribbing comprising a vertical tier of stretchers consisting of a plurality of separate horizontal units, and a vertical tier of headers arranged at an angle to the stretcher tier and consisting of a plurality of separate horizontal units, the stretcher units alternating with the header units and the ends of said units having interlocking tongues, the stretcher tongues abutting end to end and some of said tongues having their respective upper and lower surfaces formed with a pair of faces beveled at an angle to each other and meeting along a line oblique to all sides of the unit, and some of said header tongues having their respective upper and lower surfaces formed with two pairs of corresponding beveled faces adapted to overlies and interfit with said abutting stretcher tongues, thereby providing a joint adapted to lock said tongues together against relative movement in four horizontal directions.

6. A cribbing comprising a vertical tier of stretchers consisting of a plurality of separate horizontal units, and a vertical tier of headers arranged at an angle to the stretcher tier and consisting of a plurality of separate horizontal units, the stretcher units alternating with the header units and the ends of said units having interlocking tongues and vertical walls on their respective upper and lower sides at the inner ends of said tongues, the stretcher tongues abutting end to end and some of said tongues having their respective upper and lower surfaces formed with a pair of faces beveled at an angle to each other, and some of said header tongues having their respective upper and lower surfaces formed with two pairs of corresponding beveled faces adapted to overlies and interfit with said abutting stretcher tongues, each pair of said bevelled surfaces meeting along a line oblique to all sides of the respective units thereby providing a joint adapted to lock said tongues together against relative movement in four horizontal directions, the said walls of each header tongue abutting the inner sides of each pair of abutting stretcher tongues and the end walls of said stretcher tongues abutting the respective sides of the header tongue, with the end of the outer end surface of the header tongue and the outer sides of the stretcher tongues lying in the same plane.

Signed by me at Boston, Massachusetts, this tenth day of February, 1928.

JOSIAH B. RUTTER.