Nov. 8, 1927. 1,648,557

W. L. McDANIEL

CRIBBING

Original Filed Dec. 26, 1925

Fig. 1.

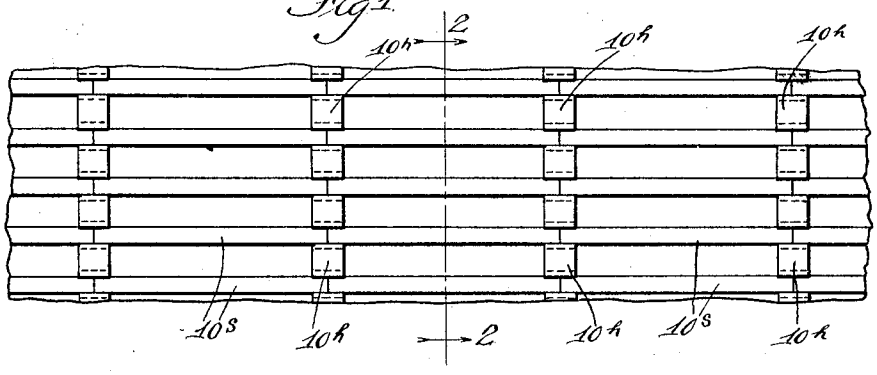


Fig. 2.

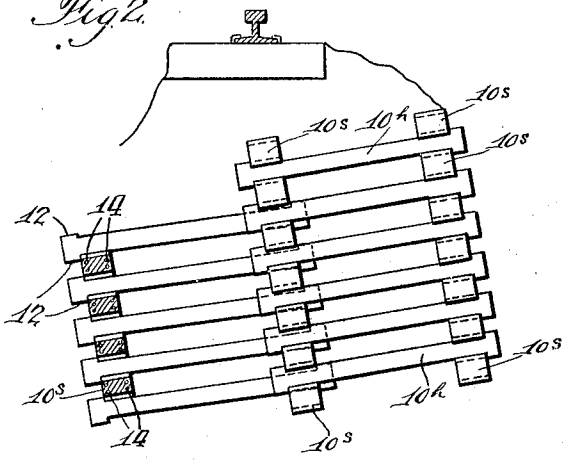
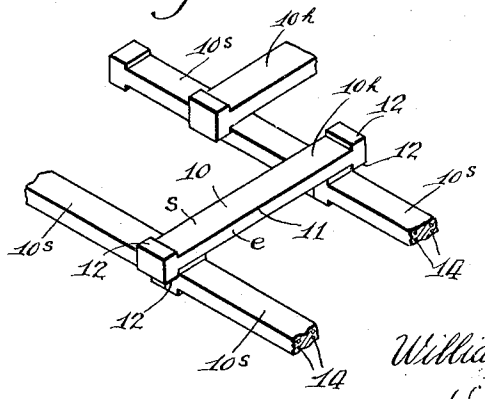


Fig. 3.



Witness:
Dave S. Magnusson.

Inventor:
William Lyle McDaniel.
By Williams, Bradbury,
McCaleb & Hinkle
Attys.

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UNITED STATES PATENT OFFICE.

WILLIAM LYLE McDANIEL, OF CINCINNATI, OHIO, ASSIGNOR TO MASSEY CONCRETE PRODUCTS CORPORATION, OF CHICAGO, ILLINOIS, A CORPORATION OF VIRGINIA.

CRIBBING.

Original application filed December 26, 1925, Serial No. 77,805. Divided and this application filed March 14, 1927. Serial No. 175,089.

My invention relates to improvements in cribbing such as is employed in the construction of retaining walls, railway embankments, piers, etc., and the present application is a division of my application for cribbing, Serial No. 77,805, filed by me on December 26, 1925.

It is one of the fundamental objects of my invention to provide an improved cribbing wall and method of erecting the same, employing in its entire construction but one standardized type of unit. In all of the prior systems of cribbing wall construction with which I am now familiar, it is necessary to employ two or three or even more different types of units or forms to complete the entire wall. The greater economy obtained through this ability to construct the entire wall with but a single type of unit or form can hardly be estimated.

This economy begins at the concrete mixer and continues through each step to the finished wall. Only one type of reinforcement is necessary; only one type of mold is necessary; the single type of unit can be stored away or packed for shipment with greater uniformity and saving of space than can a heterogeneous collection of several different types of units; there is avoided the necessity of accurate computation or apportionment of the number of stretcher units, header units, base units, etc., for the erection of a given size wall; the erection of the wall is simplified by avoiding the necessity of sorting, and the possibility of a shortage of one particular type of unit; and there is no necessity of carrying or returning left-overs of one or more types of units.

By virtue of particular features in the design of the present unit and by the present method of erecting the cribbing from these units, there is effected a considerable saving in the number of units required for a given size wall (this saving approximating 9% in the case of units of the dimensions hereinafter given).

The use of a single type of unit, and the particular design of this unit, effects a considerable saving in concrete (this approximating 5% when using units of the particular dimensions described).

Another advantage inherent in the present construction of cribbing wall is the fact that the bearing surface at each joint between stretcher units and header units is increased approximately one-third. This permits the use of a standard size of unit for walls of greater height than has heretofore been practicable with units of this size.

Other objects and advantages will appear more fully from the following description and from the accompanying drawings, in which similar characters of reference indicate similar parts throughout the several views:

Fig. 1 is a front elevational view of my improved cribbing wall,

Fig. 2 is a vertical sectional view through the cribbing on the line 2—2 of Fig. 1,

Fig. 3 is a view in perspective of a fragment of the wall illustrating one method of erection which has particular application to high walls.

Referring to Fig. 3, 10 indicates in general the one single type of unit which is used throughout the entire wall and which consists of a long bar portion 11 of oblong cross section. To differentiate between the different sides of this bar portion I have designated the relatively narrow edge surfaces *e*, and the relatively wide side surfaces *s*.

Extending from the ends of this unit are flanges or legs 12 which project from the relatively wide side surfaces of the bar portion. The relatively narrow edge surfaces extend flush out to the very extremity of the units at both ends, thus, viewed from one of the edges *e* the flanges or legs 12 form T-shaped heads on the ends of the unit, and viewed from the relatively wide side *s* the side edges of the unit extend parallel throughout the entire length of the unit. Wire or rod reinforcing 14, of any suitable type, extends throughout the unit.

In order to acquaint those skilled in the art fully with all of the details of this unit I have appended below the exact dimensions of a design of unit which I have found preferable from many angles. This particular design of unit effects the saving of concrete mentioned above, while retaining the necessary strength for the erection of high walls, gives the increased bearing area referred to and facilitates rapid computation of the number of units required for a wall of given height.

The unit is substantially 6 feet long. The oblong bar portion 11 has a width across its

edge surfaces *e* of 4 inches and a width across its side surfaces *s* of 8 inches. The flanges or legs 12 project or rise 1 inch from the wide side surfaces *s* of the bar portion, and these flanges extend back from the ends of the bar to a depth of 4 inches. It will be understood that these dimensions are merely exemplary of relative proportions and can be varied as desired, but these relative dimensions secure the advantages pointed out above to the fullest measure.

Referring to the method or methods of erecting cribbing walls with this single type of unit, Fig. 3 illustrates the method of erection which I employ for erecting relatively high walls. Two parallel rows of units are first laid upon the ground end to end with the projecting legs 12 extending vertically and with the flat side surface *s* horizontal, and preferably resting upon the ground. The ends are placed substantially in contact and the joints of one row are placed exactly opposite the joints in the other row. These units thus occupy the relation of stretcher units, and accordingly have been designated 10^s in Figs. 1 and 2.

Across these two rows of stretcher units, at each pair of joints, is then placed another unit, which unit occupies the relation of a header unit and accordingly has been designated 10^h. These header units are placed with their wide side surfaces *s* horizontal and resting upon the upper surfaces of the stretcher units, and the two rows of stretcher units should be spaced the proper distance so that the flanges or legs 12 of the header units will just hook over the two abutting flanges or legs of the stretcher units, at each end of the header, thereby locking the two rows of stretcher units against separation. Each header unit is placed centrally over its respective joint, having half of its flat side surface supported by the flange or leg 12 of one stretcher end and the other half adjacent flat side surface supported by the flange or leg 12 of the abutting stretcher.

It will thus be observed that the flange holds both adjacent stretcher units against outward separation relative to each other. As the thickness of the flanges or legs 12 is substantially 4 inches, and the width of the side surface *s* is 8 inches, it will also be observed that the combined thickness of two flanges or legs is sufficient to provide a supporting area utilizing every part of the contracting area of the header units. In other words, the combined thickness of the flanges exactly equals the width of the side *s* which they support, and thus the units are peculiarly adapted to be associated in this manner providing an enlarged bearing surface without any waste of material.

Upon these header units is now placed another tier or layer of stretcher units 10^h in the front and rear rows. Thereafter another set of header units is placed across this upper layer of stretcher units, as before described, and this process is repeated until the wall has reached the desired height. The earth or gravel fill is then dumped behind the wall, whereby the entire series of units is bonded together by the anchoring action of this fill.

It will be observed that by placing both the header and stretcher units with their flat sides horizontal that this method of erection utilizes the entire width of the stretcher unit for giving bearing area to the header units, thus obtaining an 8 inch width of bearing area transversely of the stretcher unit, instead of a 6 inch width of bearing area. As the combined depth of the two flanged ends of adjacent stretcher units equals the 8 inch dimension of the header unit, this affords a bearing area which is equal to the width of the header unit. Besides performing the function of shoulders upon the header units, the flanges or legs 12 on the stretcher units afford an additional rise of two inches, which is not available from plain stretcher bars without diminishing the extent of bearing contact between the stretcher units and the header units.

Where a secondary or supplementary course of stretcher units is desired in the rear of the first two courses, such as shown in Fig. 2, this additional course of stretchers may be erected concurrently with the two outer courses. The joints, however, in this third course of stretchers are preferably offset relative to the joints in the first two courses of stretchers. By this offset relation, header units 10^h can be hooked over the stretcher units of the second course at points intermediate the ends of the stretcher units and the opposite ends of these header units can be placed over the joints of the rear course of stretcher units. The formation of the rear course of stretcher units will then be identical to that of the other courses, but the forward ends of the headers employed in this course will merely rest upon the flat sides of stretchers in the second course, each of said headers being supported by its respective stretcher in the second course. This method of joining the third course of stretcher units to the first two courses will be apparent from Figure 3, and it will be obvious that any number of courses may be employed according to the same system.

It will thus be observed that I have invented a form of cribbing which employs a single type of unit throughout the entire wall, and that not only are great economies accomplished by the use of a single type of unit, but by the use of the unit with its vertically extending flanges and broad sides in the particular relation here used, an additional rise is secured by the legs at each end, and increased area of bearing contact

provided so that walls may be built to a much greater height. While I have illustrated and described a specific embodiment of my invention, many modifications may be made without departing from the spirit of my invention. I do not wish to be limited to precise details of the construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a cribbing wall constructed entirely of one type of standard unit serving both as a header unit and as a stretcher unit and consisting of a bar portion with relatively narrow edge surfaces and relatively wide side surfaces with flanges projecting at the ends of said bar outwardly from the relatively wide side surfaces, the combination of superposed rows of such units placed end to end in the relation of stretcher units with the flanges projecting vertically, and tiers of such units extending transversely of the wall with each unit lying between upper and lower rows of stretcher units in the relation of header units, said header units having their wide side surfaces lying horizontally across the ends of adjacent stretcher units and with their upward and outward projecting flanges hooking over the flanged ends of said stretcher units.

2. In a cribbing wall constructed entirely of one type of standard unit serving both as a header unit and as a stretcher unit and consisting of a bar portion with relatively narrow edge surfaces and relatively wide side surfaces with legs of rectangular cross section, projecting at right angles to said side surfaces in both directions at each end of said unit, the combination of a plurality of said units placed end to end in rows with their legs extending upward and downward, in the relation of stretcher units and a plurality of the same units piled alternately and transversely between said stretchers in the relation of headers, said headers having their wide side surfaces supported adjacent each header leg by the upwardly projecting legs upon two stretchers placed end to end, and the legs on said headers serving as retaining shoulders for said stretchers.

3. In a cribbing wall constructed entirely of one type of standard unit serving both as a header unit and as a stretcher unit and consisting of a bar portion with relatively narrow edge surfaces and relatively wide side surfaces with legs of rectangular cross section, projecting at right angles to said side surfaces in both directions at each end of said unit, the combination of a plurality of said units placed end to end in rows with their legs extending upward and downward, in the relation of stretcher units and a plurality of the same units piled alternately and transversely between said stretchers in the relation of headers, said headers having their wide side surfaces supported adjacent each header leg by the upwardly projecting legs upon two stretchers placed end to end, and the legs on said headers serving as retaining shoulders for said stretchers, the width of said side surfaces being substantially equal to the combined thickness of the upwardly extending legs of the stretchers on which they rest.

4. In a cribbing wall constructed entirely of one type of standard unit serving both as a header unit and as a stretcher unit and consisting of a bar portion with relatively narrow edge surfaces and relatively wide side surfaces with legs of rectangular cross section, projecting at right angles to said side surfaces in both directions at each end of said unit, the combination of a plurality of said units placed end to end in rows with their legs extending upward and downward, in the relation of stretcher units, a plurality of the same units piled alternately and transversely between said stretchers in the relation of headers, said headers having their wide side surfaces supported adjacent each header leg by the upwardly projecting legs upon two stretchers placed end to end, and the legs on said headers serving as retaining shoulders for said stretchers, and a plurality of additional stretchers and headers having one end of each header resting upon the flat side of one of the previously mentioned stretchers and having the other ends of said headers associated with stretchers in same manner as the first mentioned stretchers and headers.

In witness whereof, I hereunto subscribe my name this 11 day of March, 1927.

W. LYLE McDANIEL.