March 12, 1929. J. S. HOBSON ET AL 1,704,941

CRIBBING

Filed June 10, 1926 3 Sheets-Sheet 1

Fig. 1.

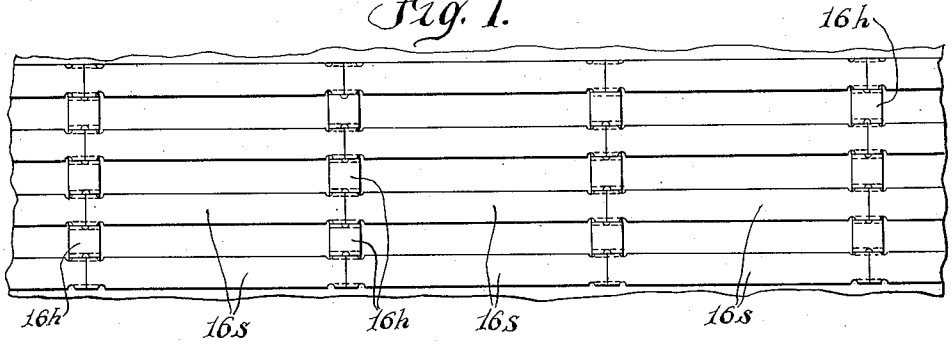


Fig. 2.

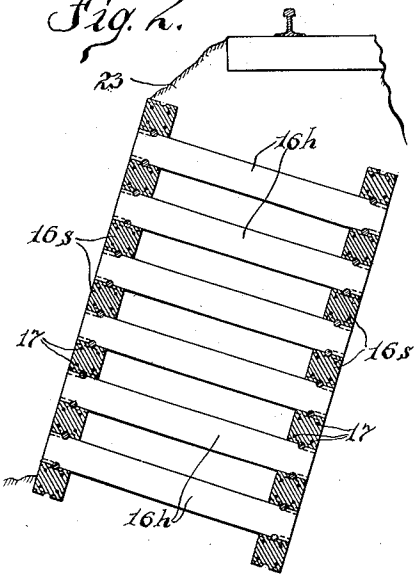


Fig. 3.

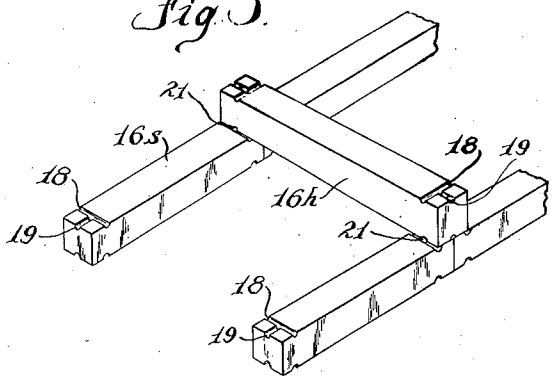
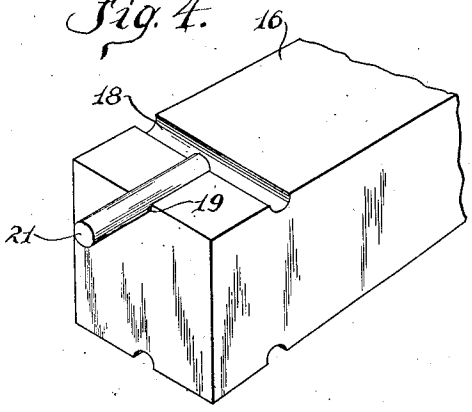


Fig. 4.



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Fig. 5.

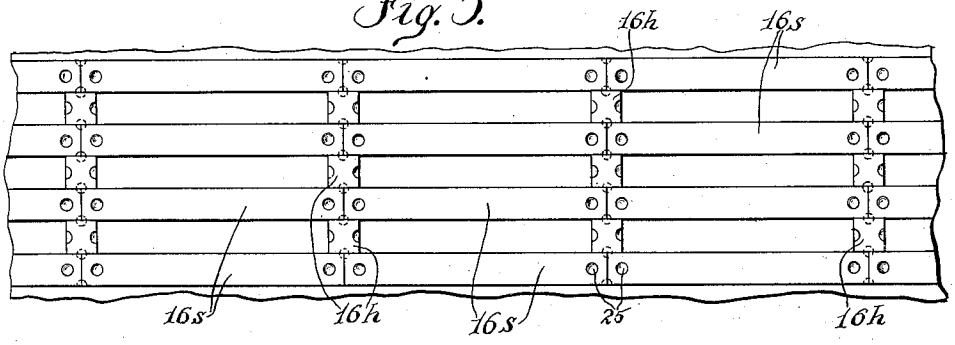


Fig. 6.

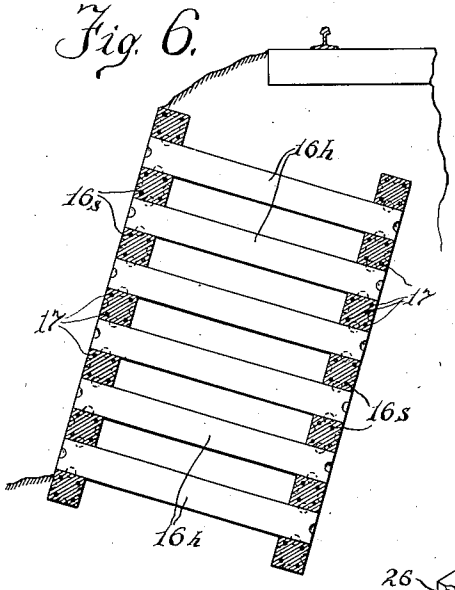


Fig. 7.

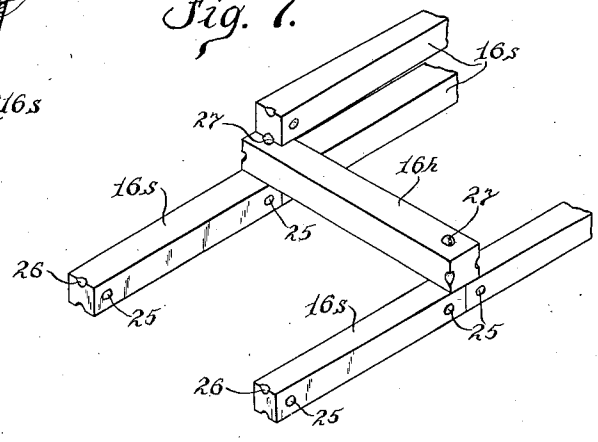
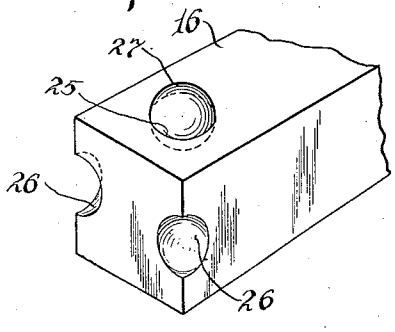


Fig. 8.



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Filed June 10, 1926 3 Sheets-Sheet 3

Fig. 9.

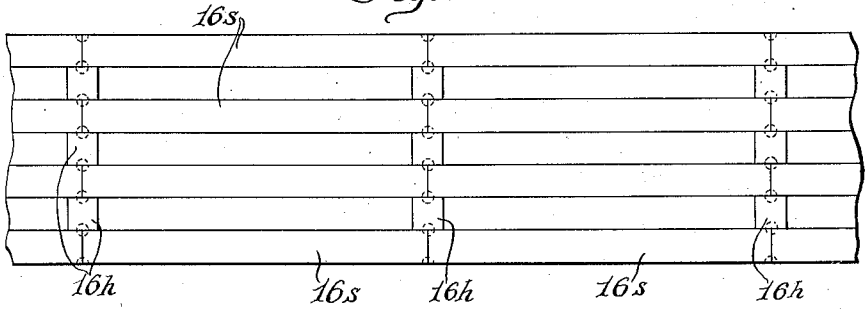


Fig. 10.

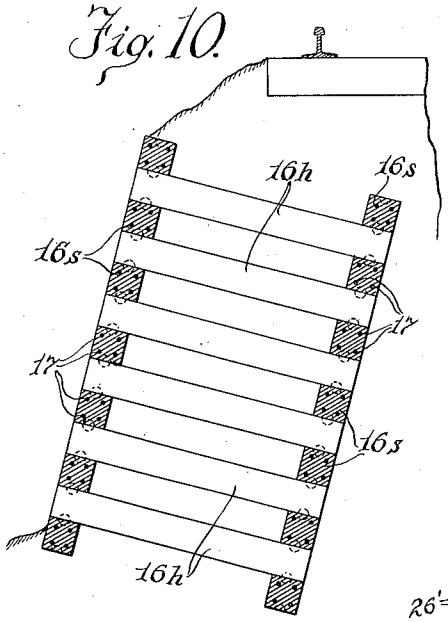


Fig. 11.

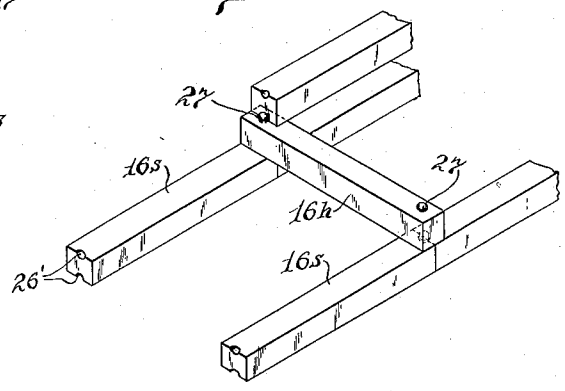


Fig. 12.

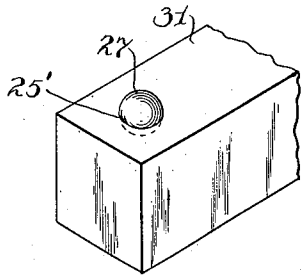
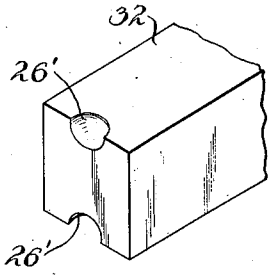


Fig. 13.



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Patented Mar. 12, 1929. 1,704,941

UNITED STATES PATENT OFFICE.

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CRIBBING.

Application filed June 10, 1926. Serial No. 114,899.

The present invention relates to cribbing, such as is used in the construction of retaining walls, railway embankments, piers, etc., and has particular reference to that type of cribbing built up of successive courses of longitudinal stretcher units and tiers of transverse header units.

The fundamental object of the invention is to provide an improved method of and means for interlocking the stretcher and header units together. According to the present invention, this interlocking arrangement is obtained by forming the stretcher and header units with matching depressions at points where they engage, and placing small bars or spheres in these matching depressions, which prevent relative shifting movement between the stretcher and header units. By virtue of this construction a standardized type of unit may be employed for both headers and stretchers, although numerous advantages of our invention may be realized when embodied in stretcher and header units of different types.

Referring to the accompanying drawings illustrating preferred adaptations of my invention:

Figure 1 is a front elevational view of the completed cribbing wall.

Figure 2 is a vertical sectional view through the wall.

Figure 3 is a fragmentary perspective view illustrating the manner of erection.

Figure 4 is an enlarged detail view illustrating the interlocking depressions in the ends of the unit.

Figures 5, 6, 7 and 8 are figures corresponding exactly to Figures 1, 2, 3 and 4, but illustrating another embodiment of our invention.

Figures 9, 10 and 11 are elevational, sectional and perspective views of another embodiment employing two types of units; and

Figures 12 and 13 are fragmentary perspective views showing the interlocking depressions in the ends of these two units.

In the embodiment shown in Figures 1 to 4 inclusive, only one type of standard unit is employed, this unit serving alternately as a header and as a stretcher. This unit, designated 16, is constructed in the form of a long bar of square or oblong section. It is preferably constructed of concrete, and when so made is re-enforced by any suitable wire rod re-enforcing 17.

At each end of the unit, transverse grooves 18 are molded in the unit, extending from side to side thereof and longitudinal grooves 19 are also molded in the ends of the unit to intersect the transverse grooves 18. These pairs of grooves 18—19 are molded in two opposite sides of the unit, corresponding to the upper and lower sides thereof. Both grooves are preferably of semi-circular form, although they might be of channel or other outline, the intersection of the two grooves 18—19 forming a T-shaped depression in these upper and lower sides of the unit at both ends thereof. The transverse grooves 18 are spaced from the end of the unit a distance substantially equal to one-half the width of the unit. The longitudinal groove 19 is located centrally of the width of the unit, and preferably, although not necessarily, intersects the transverse groove 18.

Referring to Figure 3, it will be evident that when two of these units are laid end to end, with these grooved surfaces forming the top and bottom sides of the units, the longitudinal grooves 19 will align and form a co-extensive groove extending across both end portions of the units. When a third unit is now laid crosswise of these two longitudinal units, with its end extending squarely across the adjoining ends of the first two units, the transverse groove 18 of this third unit will register with the aligned grooves 19 of the first two units, producing a complete circular opening or groove defined in the contacting surfaces of these three units (Figure 3). A pin or bar 21 engaging in this circular opening will have its lower portion within the confines of the aligned longitudinal grooves 19 and its upper portion within the confines of the transverse groove 18 of the upper unit. Thus, this pin or bar will interlock the three units together, effectively holding the two aligned units against pressures tending to force either or both of these units outwardly from under the end of the transverse unit.

This briefly describes the interlocking relation established between the stretchers and the headers and the manner of erecting cribbing walls with this type of unit. In constructing a wall such as shown in Figures 1 and 2, two parallel rows of units 16 are first laid on the ground end to end and with the grooved sides constituting the top and bottom surfaces of these units. 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 16^s in Figures 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 16^h. These header units are placed with their grooved sides constituting the upper and lower surfaces thereof. Just before these header units are placed on the joints of the stretcher units, the short pins or bars 21 are dropped in the aligned grooves 19—19 of the adjoining stretcher units. These pins or bars are of a diameter substantially to fill the completed openings. Thus, when the header units 16^h are placed over these joints, the transverse grooves 18 will engage over the protruding upper portions of the interlocking pins or bars 21, which pins or bars substantially fill the completed opening. Another series of these interlocking pins or bars are then placed in the transverse grooves 18 in the top sides of these header units 16^h and two second rows of stretcher units are then placed across the tops of these header units. The aligning longitudinal groove 19 of these stretcher units will drop over the pins which have been placed in the top grooves 18 of the header units, and thus the joint between these stretcher units and the top sides of the header units will also be interlocked by these pins. Thereafter another set of header units is then placed across this upper layer of stretcher units with the interlocking pins interposed as before described, and this process is repeated until the wall has reached the desired height.

It will be observed that the interlocking relation thus established between the stretcher units and the header units is of maximum effectiveness for preventing lateral or outward movement of the stretcher units relative to the ends of the header units or relative to each other. This re-enforcement against outward displacement is very desirable as the pressure of the fill 23 (of gravel, dirt, cinders or the like) has a tendency to force these stretcher units outwardly from the wall. There is practically no tendency for longiudinal displacement of the stretcher units as the end to end contact between these units takes care of these stresses.

The interlocking pins 21 preferably consist of short sections of round iron bar, although if the grooves 18—18 are of rectangular section pins of corresponding section may be employed therein. These pins or bars may be galvanized or otherwise rendered rust-proof if desired. The relatively small areas of the grooves 18—19 do not diminish the bearing area between the stretcher and header units materially, and the iron pins and the relatively wide expanse of concrete between the grooves and the adjacent edges of the units oppose maximum sheering resistance against displacement of the units.

In Figures 5 to 8 inclusive, we have shown another embodiment also permitting of the use of a single standard unit serving both as a header and as a stretcher. In its preferred form this unit is also constructed as a bar of re-enforced concrete of square or oblong section. Formed in two opposite sides thereof, at both ends of each unit, are two semi-spherical depressions 25. These depressions are set back from the ends of the bar a distance equal to one-half the width of the bar, i. e., with their centers spaced from the ends a distance equal to one-half the width of the bar. The corner edges, opposite the sides having the surface depressions 25, have edge depressions 26 molded therein, these edge depressions being of quarter-spherical form and of a radius equal substantially to the radius of the surface depressions 25.

In erecting a retaining wall with this type of unit, the two rows of structures are laid on the ground with the edge depressions 26 at top and bottom of each stretcher unit. Thus, the edge depressions in the upper corners of each pair of abutting stretcher units will coincide to form semi-spherical cups or depressions, substantially similar in size and depth to the surface depressions 25. Into these cup-shaped depresions formed at the abutting ends of each pair of stretcher units are now placed interlocking spheres 27, preferably consisting of iron balls of a radius corresponding to the radius of these depressions. In placing the header units over the joints of the stretcher units, the sides containing the surface depressions 25—25 are placed top and bottom so that the surface depression 25 in the underside of the header unit will drop down over the protruding upper half of the interlocking ball 27. A second series of balls 27 are now placed in the surface depressions 25 on the upper sides of these header units, and the two rows of additional stretcher units are now placed upon these header units. The edge depressions 26 of each stretcher unit will embrace one-half of the protruding upper portion of the ball, whereby the ball will interlock the three units together. The progressive placing of header units and stretcher units will be obvious from the preceding description. The interlocking balls will be held against any possibility of displacement from between the units, and their engagement with the shoulders or side surfaces of the depressions 25 and 26 will securely lock the stretcher units against outward displacement relative to the header units or relative to each other.

In Figures 9 to 13 inclusive I have shown another embodiment, very similar to the embodiment just described, differing therefrom

principally in the fact that it employs different types of units for the headers and for the stretchers.

The header units 31 have the two spherical depressions 25′—25′ in opposite sides, substantially the same as shown in Figure 8. The stretcher units 32 have edge depressions 26′—26′ in opposite edges thereof substantially similar to the edge depressions shown in Figure 8.

In erecting this type of cribbing wall the stretcher units are laid in rows with their ends abutting as previously described, the edge depressions 26′ in opposite ends of adjacent stretchers coinciding or matching to form semi-spherical cups into which are dropped the interlocking balls 27. The header units 31 are then placed over these stretcher units with their surface depressions 25′ embracing the upper halves of the interlocking spheres 27, this process of laying courses of stretchers and tiers of headers being repeated until the wall has reached the desired height as previously described.

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

1. A cribbing wall constructed of a plurality of courses of stretcher units and a plurality of tiers of header units with the header units having their ends lying over the joints between adjacent stretcher units, the upper and lower surfaces of said stretcher units having depressions therein, the upper and lower surfaces of said header units having depressions therein matching with the depressions in said stretcher units, and interlocking members laid in said matching depressions.

2. A cribbing wall constructed of a plurality of courses of stretchers and a plurality of tiers of headers, the ends of said headers resting over the joints between adjacent stretchers, the upper surfaces of said stretcher units having depressions therein adapted to align to produce a substantially continuous depression across the joint between adjoining stretchers, the under surface of each header unit having a depression therein adapted to match with the depression formed in the upper sides of said stretcher units, and interlocking members placed in the depressions in said stretcher units and protruding into the depressions in said header units.

3. A cribbing wall constructed in a plurality of units each having edge depressions formed in opposite edges thereof at both ends of the unit and having surface depressions in opposite sides thereof at both ends of the unit, said units being laid in courses in the relation of stretcher units, and in transversely extending tiers in the relation of header units, the edge depressions of adjoining stretcher units coinciding and matching with the surface depressions of the adjacent header unit, and interlocking members engaging in said matching depressions.

4. A cribbing wall constructed of a plurality of units, each having edge depressions formed in opposite edges thereof at both ends of said unit and having surface depressions in opposite sides thereof at both ends of the unit, said units being disposed in courses in the relation of stretcher units and in transversely extending tiers in the relation of header units, the edge depressions of adjoining stretcher units coinciding and matching with the surface depressions of adjacent header units, and spherical interlocking members engaging in the matching depressions of said units.

5. A cribbing wall constructed of header units and stretcher units, the bearing surfaces of said units having matching depressions therein, and spherical interlocking members reposing in said matching depressions for interlocking said units together.

6. A cribbing wall constructed of header units and stretcher units, said stretcher units having edge depressions in opposite edges of the unit at both ends thereof, said header units having surface depressions in opposite sides thereof at both ends of each unit, the edge depressions of adjoining stretcher units, coinciding and matching with the surface depressions of adjacent header units, and interlocking members disposed in said matching depressions.

7. A cribbing wall constructed of a plurality of courses of stretcher units laid end to end, a plurality of tiers of header units extending transversely of the stretcher units with their ends engaging over the joints between adjacent stretcher units, said stretcher units having spherically formed edge depressions in opposite edges thereof at the ends of the unit, said header units, having surface depressions in the opposite sides thereof adjacent the ends of the unit, the edge depressions of adjoining stretcher units coinciding and forming semi-spherical pockets, the surface depressions of said header units matching with the resulting semi-spherical pockets formed by said stretcher units, and interlocking balls engaging in said depressions.

8. A cribbing wall comprising a plurality of header units and stretcher units, said headers and stretchers being laid alternately and transversely upon each other, a plurality of interlocking members between said header and stretcher units, said stretchers having shoulders on each side of said interlocking members to maintain said stretchers in alignment end to end and said headers having shoulders on the outside of said interlocking members to resist spreading of stretcher walls.

9. In a cribbing the combination of a pair of stretchers laid end to end, each stretcher

having a depression in its end communicating with a depression in the other stretcher, an interlocking member in said depressions to align said stretchers, said member projecting above said stretchers, and a header laid transversely on said stretchers and having a depression to receive said member whereby said header maintains said stretchers against lateral movement.

10. A cribbing wall unit comprising an elongated concrete member of substantially rectangular cross section and having hemispherical depressions similarly disposed on opposite sides of the same adjacent each end.

11. A cribbing wall unit comprising an elongated concrete member of substantially rectangular cross section and having quarter spherical depressions similarly disposed in opposite edges at each end of the same.

12. A cribbing wall unit compriing an elongated concrete member of substantially rectangular cross section having hemispherical depressions similarly disposed on opposite sides of the same adjacent each end and having quarter spherical depressions similarly disposed in opposite edges at each end of the same.

In witness whereof, we hereunto subscribe our names as follows:

Chicago, Illinois, May 18, 1926.
JOHN S. HOBSON.

Detroit, Michigan, May 29, 1926.
JOHN S. HUNTOON.