June 22, 1948. W. A. BATES ET AL 2,443,589

LOCKING MEANS FOR FLOOR ARMOR

Filed Nov. 10, 1944

Fig. 1

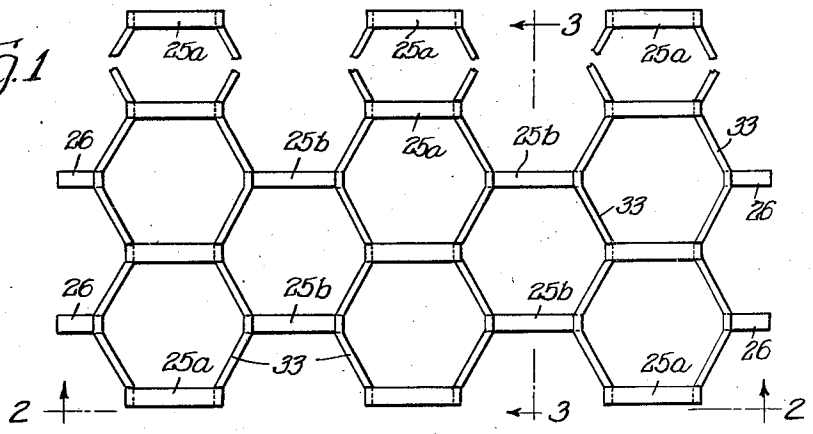


Fig. 2

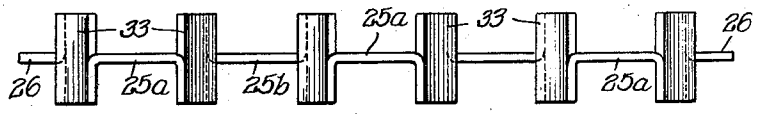


Fig. 3

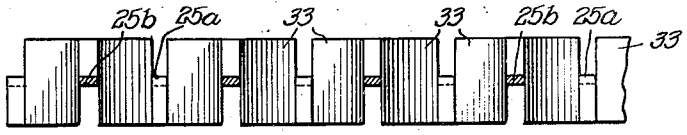


Fig. 4

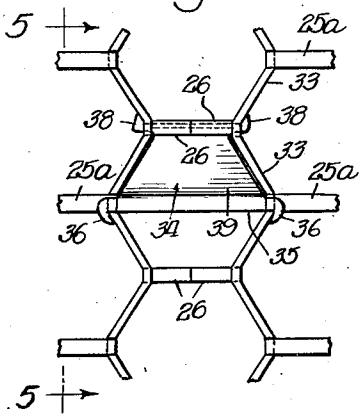


Fig. 6

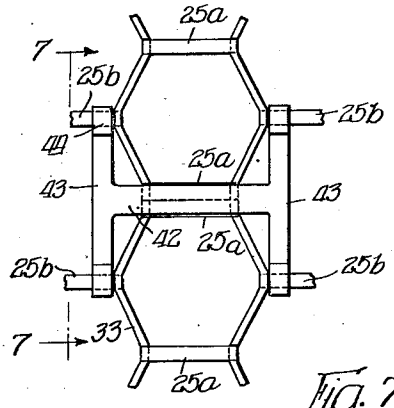


Fig. 5

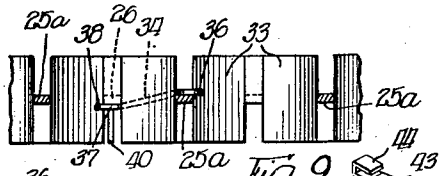


Fig. 7

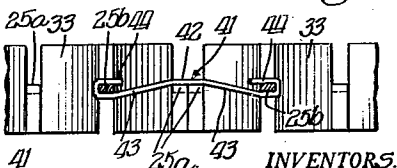


Fig. 8

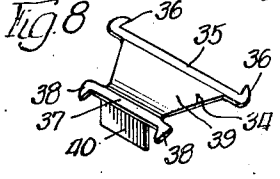
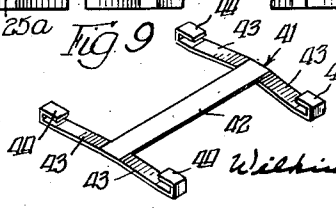


Fig. 9



INVENTORS.
Walter A. Bates.
and
Walter A. Bates, Jr.,
BY
Wilkinson, Huxley, Byron & Knight
Attys.

Patented June 22, 1948 2,443,589

UNITED STATES PATENT OFFICE

2,443,589

LOCKING MEANS FOR FLOOR ARMOR

Walter A. Bates and Walter A. Bates, Jr., Joliet, Ill., assignors to Beulah H. Bates, Joliet, Ill.

Application May 10, 1944, Serial No. 534,864

3 Claims. (Cl. 94—8)

1

The present invention relates to improvements in floor armor.

In the making of concrete floors, particularly those subjected to relatively heavy duty, it is usual practice to provide metallic armoring means, commonly consisting of bars mounted on edge and held in upright position by connecting means. The armor is laid upon a foundation and the concrete is poured into the spaces between the bars and around the connecting means, the top of the concrete being in approximate coplanar relationship with the tops of the metal bars.

Floor armor is commonly supplied by the manufacturer in units having predetermined dimensions and is assembled on the job.

Floor armor as heretofore provided leaves much to be desired for the reason that when the concrete is poured it is divided into relatively small units which are likely to break away under impact or heavy loads. Furthermore, floor armor as commonly provided involves the use of pieces of metal placed flatwise in contact with each other, providing cracks or crevices likely to collect moisture, promoting the formation of rust and undesired expansion. Other objections to floor armor as heretofore commonly provided reside in the relative difficulty of connecting the units into an assembly on the job.

A further object is to provide simple and effective means for connecting together units of floor armor.

A further object is to provide floor armor locking means well adapted to meet the needs of commercial service.

Further objects will appear as the description proceeds.

Referring to the drawings—

Figure 1 is a fragmentary plan view illustrating a portion of a unit of floor armor;

Figure 2 is a side view of the construction of Figure 1, Figure 2 being taken along the plane indicated by the arrows 2—2 of Figure 1;

Figure 3 is a sectional view taken along the plane indicated by the arrows 3—3 of Figure 1;

Figure 4 is a fragmentary view illustrating the manner in which two neighboring armor units embodying the principles of the present invention are connected together along one axis;

Figure 5 is a sectional view taken along the plane indicated by the arrows 5—5 of Figure 4;

Figure 6 is a fragmentary plan view illustrating how two neighboring armor units are

2

connected together along an axis at right angles to the axis illustrated in Figure 4;

Figure 7 is a sectional view taken along the plane indicated by the arrows 7—7 of Figure 6;

Figure 8 is a perspective view of a locking member as used in the construction illustrated in Figures 4 and 5; and

Figure 9 is a perspective view of a locking member as used in the construction illustrated in Figures 6 and 7.

Referring first to Figures 1 to 3, a floor armor unit is illustrated swedged up out of sheet material to provide a plurality of vertically disposed portions indicated by the numerals 33—33, connected by means of the cross bars 25*a* and 25*b* to provide a plurality of openings of generally octagonal contour. Said floor armor unit is also provided with the cantilever cross bars 26.

The particular floor armor unit illustrated and described presents transverse side edges interruptedly defined by the corresponding cross bars 25*a*—25*a* (Figure 1). The longitudinal side edges of each armor unit are interruptedly defined by the ends of the cantilever cross bars 26—26.

The loci of the outer side edges of the cross bars 25*a*—25*a* and the ends of the cantilever cross bars 26—26 will be the sides of a rectangle.

According to the present invention a plurality of armor units as above described will be located side by side and end to end, and will be held together by clips or locking devices to form an assembly. Longitudinal side edges defined by the ends of the cantilever cross bars 26—26 will, according to the present invention, be held together by means of a clip or locking member such as illustrated in Figures 4, 5 and 8. Armor units will be secured to neighboring armor units along transverse lines defined by the outer edges of the cross bars 25*a*—25*a* by clips such as illustrated in Figures 6, 7 and 9.

Referring now to Figures 4, 5 and 8, a locking member 34 is illustrated which is a sheet metal member having a transverse portion 35 provided with hooks 36—36 at its two extremities. Said locking member 35 also has the transversely extending portion 37 having the hooks 38—38 at its extremities. Said transversely extending portions 35 and 37 are connected by the slanting portion 39. Extending downwardly from the transversely extending portion 37 is the foot portion 40. As illustrated in Figures 4 and 5, the locking member 34 is so disposed relative to adjacent longitudinal edge portions of adjacent armor units that the transversely extending portion 35 is located above corresponding cross bars

25*a*—25*a*, and the transversely extending portion 35 is located below adjacent cantilever cross bars 26—26. The foot 40 rests upon the foundation upon which the armor units are located and serves to hold the transversely extending portion 37 up adjacent to the corresponding cantilever cross bars 26—26. The hooks 36—36 and 38—38 prevent adjacent armor units from spreading away from each other.

Figures 6, 7 and 9 illustrate locking means for securing neighboring armor units together along the transversely extending side edges thereof. As shown in Figure 9, the locking member, which is indicated as a whole by the numeral 41, is provided with the elongated portion 42, which has extending from each extremity thereof a pair of arms 43—43, each having a hook 44 at its extremity. The portion 42 as shown in Figures 6 and 7 will be located above the adjacent side edge cross bars 25*a*—25*a* of neighboring armor units, and the arms 43—43 will be disposed underneath the cross bars 25*b*—25*b* located inwardly of said side edge cross bars 25—25, the hooks 44—44 being hooked over said last mentioned cross bars. For this purpose the arms 43—43 will slant downwardly slightly from the plane of the portion 42 of each locking member 41.

The floor armor according to the present invention has the advantage that each unit thereof may be readily swedged from sheet material. Neighboring units may be simply and efficiently connected together to form an assembly, and said assembly may be poured with concrete without the formation of such small units of concrete that they tend to break easily in service. According to the present invention the runs of concrete will be continuous, whereby the concrete is highly resistant to breakage. No extended flatwise engagement between members of any armoring unit or neighboring unit is had, and accordingly the difficulties due to crevices or cracks are avoided. The relatively small flatwise engagement between the clips or locking members 34 and 41 with the armoring units is inconsequential.

Though a preferred embodiment of the present invention has been described in detail, many modifications will occur to those skilled in the art. It is intended to cover all such modifications that fall within the scope of the appended claims.

What is claimed is:

1. Locking means for adjacent armor units which armor units have edge cross bars disposed along side edges thereof, and other cross bars located parallel with said first mentioned cross bars and disposed inwardly thereof, which locking means includes a portion adapted to overlie adjacent edge side bars of neighboring units, said portion at each of its extremities being provided with a pair of laterally extending arms, each of said arms having a hook at its extremity adapted to be hooked over said other cross bars.

2. A locking member for securing together adjacent armor units, which adjacent armor units have cantilever cross bars at their adjacent edges and other cross bars disposed inwardly of said cantilever cross bars, said locking member comprising a sheet metal member having a portion having hooks at its ends adapted to overlie said other cross bars and a portion adapted to underlie cantilever cross bars of adjacent units, said last mentioned portion also having hooks at its ends, each of said portions being adapted to engage said units, each of said portions, including its hooks, being flat.

3. A locking member for securing together adjacent armor units, which adjacent armor units have cantilever cross bars at their adjacent edges and other cross bars disposed inwardly of said cantilever cross bars, said locking member comprising a sheet metal member having a portion having hooks at its ends adapted to overlie said other cross bars and a portion adapted to underlie cantilever cross bars of adjacent units, said last mentioned portion also having hooks at its ends, each of said portions being adapted to engage said units, each of said portions, including its hooks, being flat, said portion underlying said cantilever cross bars having a foot for holding it in adjacency with said cantilever cross bars.

WALTER A. BATES.
WALTER A. BATES, JR.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
854,927	Clark	May 28, 1907
882,491	Clark	Mar. 17, 1908
1,103,034	Clark	July 14, 1914
1,707,533	Nagin	Apr. 2, 1929
1,983,412	Smith	Dec. 4, 1934
2,102,302	Arnold	Dec. 14, 1937
2,282,519	Holmes	May 12, 1942

FOREIGN PATENTS

Number	Country	Date
23,074	Great Britain	1895
490,121	Germany	Jan. 24, 1930