Jan. 16, 1923. 1,442,279.

O. S. LLOYD.

CONCRETE PILE OR BUILDING UNIT.

FILED APR. 28, 1922.

FIG. 1

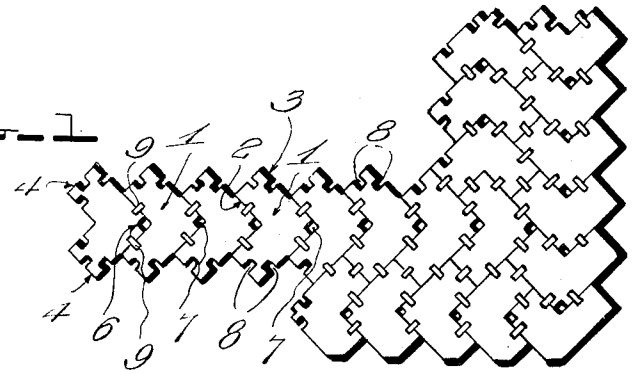


FIG. 5

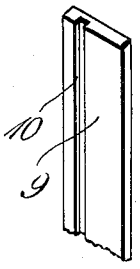


FIG. 3

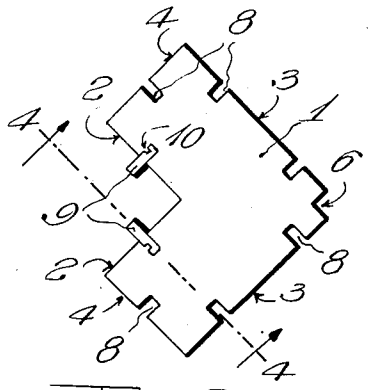


FIG. 2

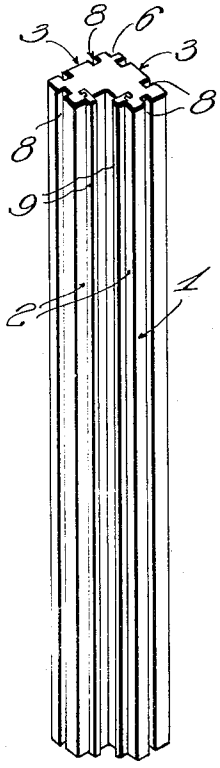


FIG. 4

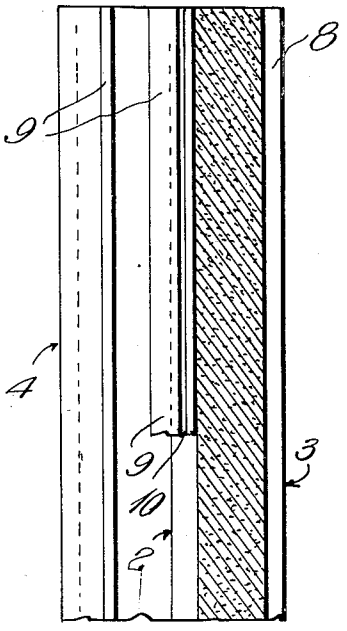
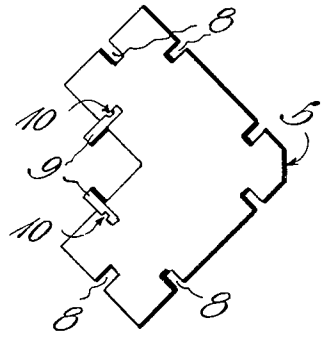


FIG. 6



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UNITED STATES PATENT OFFICE.

OTIS S. LLOYD, OF SALISBURY, MARYLAND.

CONCRETE PILE OR BUILDING UNIT.

Application filed April 28, 1922. Serial No. 557,077.

To all whom it may concern:

Be it known that I, OTIS S. LLOYD, a citizen of the United States, residing at Salisbury, in the county of Wicomico and State of Maryland, have invented certain new and useful Improvements in Concrete Piles or Building Units; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a building unit which will be principally used in constructing piles and may be used in constructing sea-walls, coffer-dams, and the like.

One object of the invention is to provide a concrete pile which is so constructed that when a coffer-dam, sea-wall or other structure is formed, the units may be put in place and these units held firmly together so that they cannot move transversely of each other and to further so construct these units that if desired, cement may be poured between them and thus prevent leakage between the units.

Another object of the invention is to so construct these units that each may be provided with a pair of anchoring strips which will be firmly held in place and will extend at substantially right angles to each other and to further provide each unit with a plurality of grooves for receiving anchoring strips carried by other units, these grooves being so positioned that a unit may be put in place in a selected relation to a unit already in place and thus a straight wall provided or if so desired a turn made at almost any desired angle.

Another object of the invention is to so construct these units that they may be taken apart if so desired or may be left in place and provide a very strong and solid structure which will not be liable to come apart.

This invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a top plan view showing a number of the units assembled to form a wall having a turn provided therein.

Figure 2 is a perspective view of one of the units.

Figure 3 is an enlarged top plan view of the units shown in Fig. 2.

Figure 4 is a sectional view taken along the line 4—4 of Fig. 3.

Figure 5 is a perspective view of one end portion of one of the anchoring strips.

Figure 6 is a view similar to Fig. 3 showing a slightly modified form.

This building unit or pile will be formed of cement and as shown will be substantially V-shaped in cross-section or top plan. Each of the units will be formed the necessary length according to the work to which it is to be put, it being understood that a unit used for building a coffer-dam would have to be longer than a unit used in building a sea-wall. These units have been indicated in general by the numeral 1 although each is substantially V-shaped in top plan or cross-section, it should be noted that they are relatively thick so as to provide inner and outer side walls 2 and 3 which extend parallel as shown in Figs. 3 and 6 and in converging relation and have their outer ends connected by end walls 4. The outer walls 3 are not extended in converging relation a sufficient distance to meet but instead are connected either by a flat surface 5 as shown in Fig. 6 or by means of a trough-shaped surface as shown in Fig. 3. From an inspection of Fig. 1, it will be seen that when these units are put together, the flat face 5 or trough-shaped face 6 will leave a space 7 between the units so that cement which is to form a binder may be poured into these spaces and when set serves to provide a filler between the units to effectively prevent the passage of water between them and further serves as a binder to securely hold the units against removal. The outer side faces 3 and the end faces 4 are provided with longitudinally extending grooves 8 which are spaced an equal distance from adjacent corners of the units. These grooves 8 are to receive the strips 9 of adjoining units so that when the units are put together they will be held against transverse movement and thus prevented from pulling apart. The strips 9 are embedded in the units and extend from the inner side walls 2 thereof at substantially right angles to each other and are spaced from the adjacent corners a distance equal to the distance between the grooves 8 and adjacent corners. Therefore, the units may be put together with the ribs or strips 9 of a unit fitting into a selected pair of grooves of another unit. This is fully brought out in Fig. 1 where the units are shown assembled in varying specific relations to each other. These strips 9 may be formed of metal or may be formed of wood but if formed of wood should be formed of

wood with the grain extending outwardly from the side faces 2 of the units so that there will be less danger of the strips being broken off. It should be further noted that each of these strips is provided with a longitudinally extending groove 10 so that when the units are molded with the strips embedded in the soft cement or concrete, the material from which the unit is formed will flow into the grooves 10 of these strips and the strips thus securely held in place and prevented from working loose. When the units are assembled, one will be driven into place and another will then be placed with its lower end adjacent the upper end of the one already put in place. The strips 9 of the second unit will then be guided into the upper end of a selected set of grooves 8 of the unit already in place and the second unit will then be driven downwardly with the strips 9 in the selected set of grooves. When this second unit is in place, additional units can then be put in place and a straight wall formed or as shown in Fig. 1 a turn made in the wall at the angle shown or at other possible angles. If the units are being formed to construct a coffer-dam or other similar structure which it is desired to take apart and remove, the units can be grasped by a suitable device when it is desired to take the structure apart and the units drawn upwardly out of place. If it is desired to provide a structure which will be very water-tight or provide a structure where it is desired to have the units firmly held in engagement with each other, thin cement can be poured into the openings 7 which will be formed so that this cement will provide a filler which will prevent water from working through and further serve as a binding to hold the units together. There has thus been provided a building unit so constructed that the units cannot have transverse movement when assembled as the strips 9 of each unit extend at right angles to each other and will thus serve to hold the units against movement in two directions.

I claim:

1. A building unit V-shaped in top plan and having its arms extending in diverging relation to each other, the arms having their ends and outer side faces provided with longitudinally extending grooves, and strips extending from the inner side faces of the arms of the unit for fitting into selected grooves of other units.

2. A building unit in the form of a pile appearing in top plan as a square having a quarter section removed, said pile having its outer side faces provided with longitudinally extending grooves, positioned equi-distant from the corners of the pile, the inner side faces of the unit being provided with longitudinally extending ribs projecting at right angles to each other for fitting into selected grooves of another unit.

3. The structure of claim 2 having the corner portion opposite the removed quarter section cut away to provide restricted spaces between assembled units.

4. A plastic building unit substantially V-shaped in cross section and provided with longitudinally extending grooves, and strips extending longitudinally of the unit and extending from the same at substantially right angles to each other for fitting into selected grooves of another unit, the embedded portions of the strips being provided with longitudinally extending grooves to receive the plastic of the unit and hold the strips in place.

5. A building unit substantially V-shaped in cross section and having relatively wide arms to provide inner and outer corners at the ends thereof, said unit having its side faces provided with grooves extending from the upper and lower ends and positioned equi-distant from adjacent corners, and ribs carried by the unit for fitting into selected grooves of an adjoining unit and extending at substantially right angles to each other to hold the units interlocked against transverse movement.

6. The structure of claim 5 having the corner portion at the junction of the outer side faces cut away to provide restricted spaces between adjoining units when put together.

In testimony whereof I have hereunto set my hand.

OTIS S. LLOYD.