July 12, 1938. C. H. MILLER 2,123,853

STRUCTURAL ELEMENT

Filed May 13, 1936

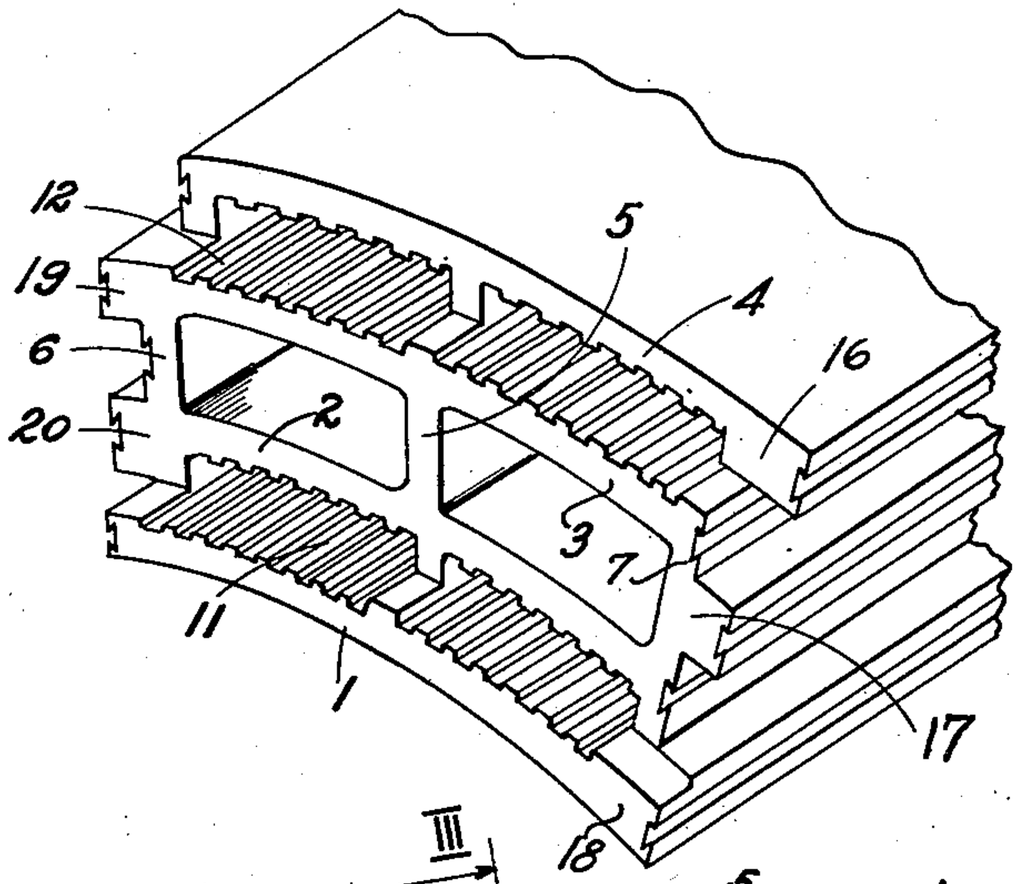

Fig. 1

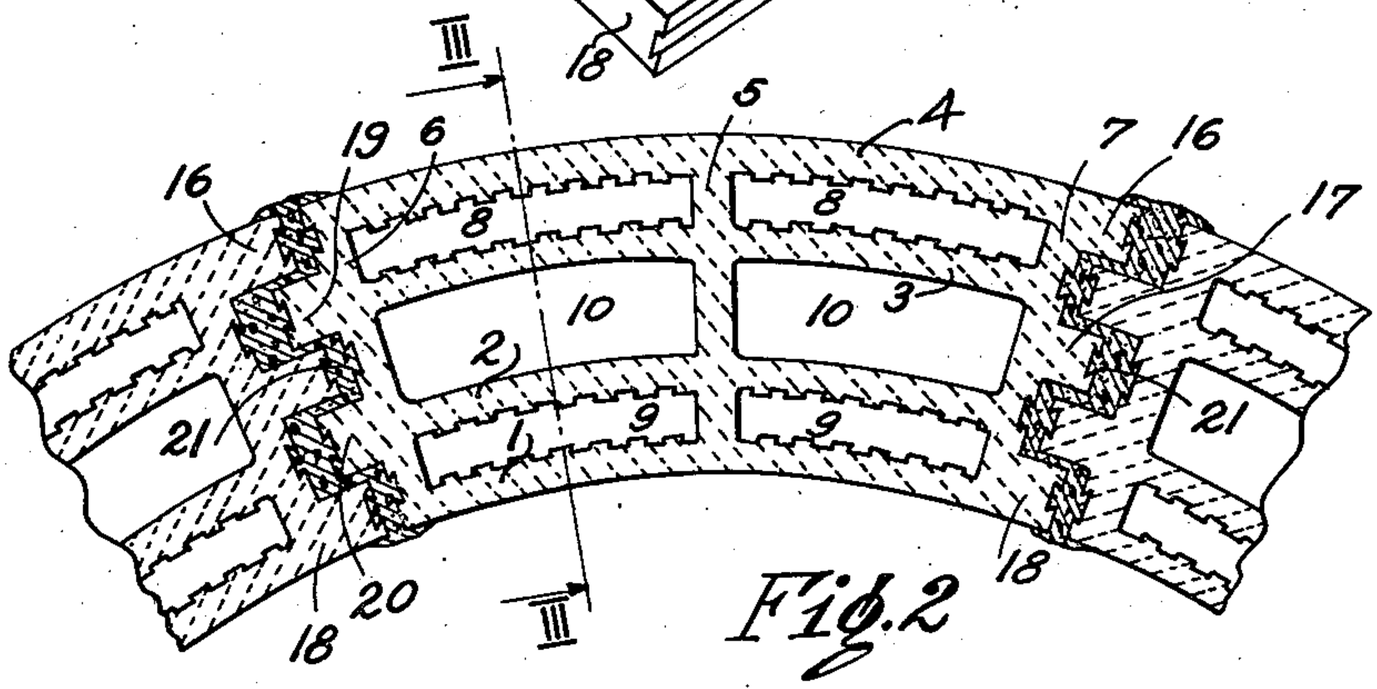

Fig. 2

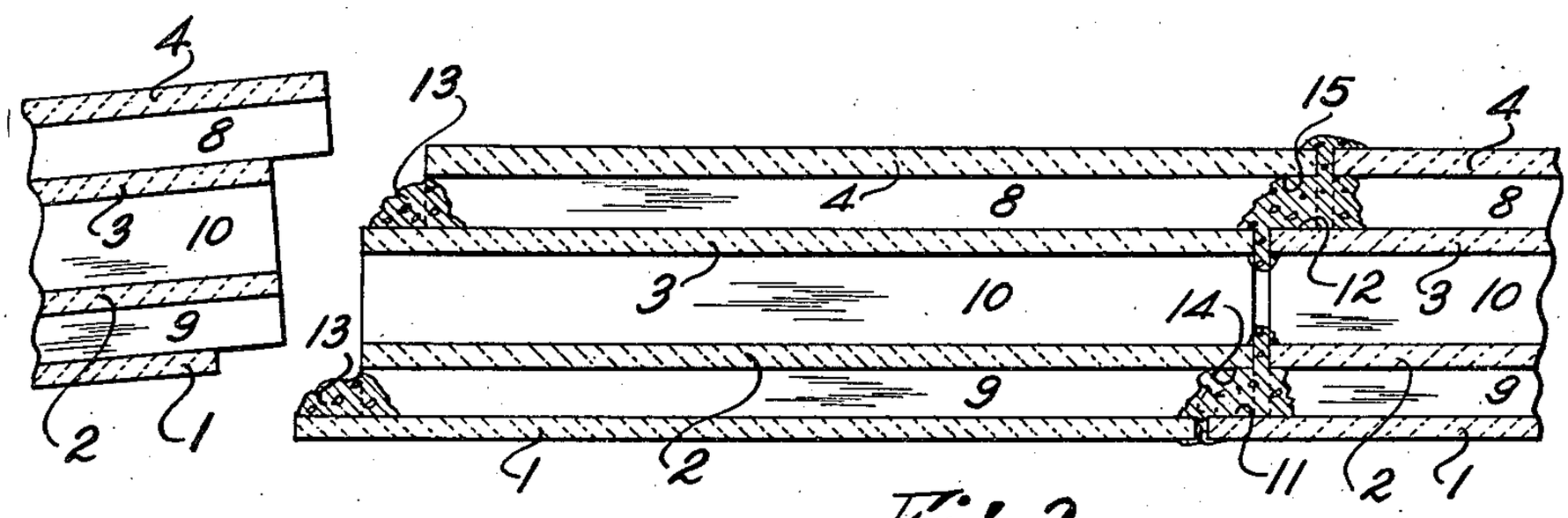

Fig. 3

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STRUCTURAL ELEMENT

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4 Claims. (Cl. 138—81)

This invention relates to a structural block or tile.

An object of the invention is to provide an improved structural block which may be effectively sealed to other similar blocks to constitute a fluid tight built up structure.

Another object is to provide an improved block which may be readily and economically manufactured.

Another object is to provide an improved block from which structures may be easily built.

Another object is to provide an improved block from which a hollow walled structure may be built and readily sealed adjacent both its inner and outer surfaces.

Other objects will hereinafter appear.

The invention will be better understood from the description of one practical embodiment thereof, illustrated in the accompanying drawing, in which:

Figure 1 is a perspective view of one form of block embodied in the invention and particularly adapted for use in the building of tubular structures such, for instance, as conduits, sewers, and the like.

Figure 2 is a transverse fragmentary sectional view of a tubular structure formed of blocks such as illustrated in Figure 1;

Figure 3 is a fragmentary longitudinal sectional view of the structure of Figure 2, taken on the line III—III thereof.

The block shown is of generally segmental configuration and consists of an inner wall **1**, an inner internal web **2**, an outer internal web **3**, and an outer wall **4**, these walls and webs all being of generally arcuate shape and concentric with each other.

The walls and webs are joined by central radial partition **5** and by two radial side walls **6** and **7**, thus dividing the interior of the block into six quadlateral lengthwise extending spaces.

The outer spaces **8** and inner spaces **9** are relatively narrow, while the central interior spaces **10** are considerably larger in cross section as shown.

As most clearly apparent in Figures 1 and 3, the webs **2** and **3** are coextensive lengthwise of the block, while the outer and inner walls are of substantially the same length as these webs, but are offset in opposite directions, so that the internal surface **11** of the inner wall and the outwardmost surface **12** of the outer web are exposed as indicated in Figure 1, forming two steps upon which mortar **13**, cement, or the like may be placed.

When the next block is positioned with its end in contact with this end of the block, the innermost surface **14** of the inner web and the interior surface **15** of the outer wall are pressed in the mortar, causing it to form a tight bond between the overlying wall and web surfaces, closing and sealing the outer and inner spaces **8** and **9**, as most clearly indicated in Figure 3. However, unless a great excess of cement is applied, the central spaces **10** will not be closed, or even materially obstructed, so that with a series of blocks a structure may be formed having continuous central passages and sealed outer and inner surfaces.

The side wall **7** of the block is provided with three projecting ribs **16**, **17**, and **18**, having between them two recesses adapted to receive the two ribs **19** and **20** on wall **6** of an adjacent block. The ribs and recesses fit loosely and are filled with mortar or cement as indicated at **21** in Figure 2.

It will, however, be apparent that other means of uniting the side of blocks might be employed, it being necessary only that a firm bond or seal be obtained at these points.

The ribs, walls, and webs are shown as provided with castellated mortar receiving surfaces for the purpose of permitting the cementitious material to more readily bond with the same, and it will be apparent that such surfaces may be easily formed by dies through which the entire block may be extruded. However, serrated or otherwise roughened surfaces might be employed if desired.

While the block above described can very conveniently be made of ceramic material, such as clay used in making other forms of tiles, it will be obvious that it may, if desired, be made of other materials, such as concrete or the like, and that due to its generally prismatic formation, it may be readily extruded through dies, molded, or formed in any other well known and convenient manner.

The arrangement of the internal webs not only provides convenient surfaces for cementing blocks together, but strengthens these very effectively, reinforcing the side walls so that a relatively thin block may be used to support a given load.

The blocks may be arranged to break joints either longitudinally or circumferentially of the structure, as may be desired, and the sealed hollow wall produced both provides a double insurance against leakage and acts as a heat insulation.

While I have described the illustrated embodi-

ment of my invention in some particularity, obviously many others will readily occur to those skilled in this art, and I do not, therefore, limit myself to the precise details shown and described, but claim as my invention all embodiments, variations and modifications coming within the scope of the appended claims.

I claim:

1. A hollow block comprising two external walls substantially equi-spaced throughout their extent, two webs therebetween substantially equi-spaced from each other and from said walls, connecting sides extending between the external walls and across the webs, one of the walls being displaced from the webs in one direction and the other wall displaced from said webs the opposite direction.

2. A hollow block having a lengthwise extending opening from one end to the other end thereof, one end of the block being formed into two steps facing in the same direction, one step being to one side of said opening and the other to the other side thereof, and the other end of the block being formed into two stepped portions both facing in the opposite direction from the steps on the first mentioned end and one step being to the one side of the opening and the other step to the other side thereof.

3. A conduit comprising a number of hollow segmental blocks, each block being provided on one end with two ledges facing in one direction and two complementary ledges facing in the opposite direction on the other end, successive blocks being arranged with their complementary ledges overlapping, and sealing material interposed between the overlapping ledges.

4. A conduit comprising a number of hollow segmental blocks, each block being provided on one end with two ledges facing in one direction and two complementary ledges facing in the opposite direction on the other end, hollow spaces being formed through each block between the two ledges at each end, successive blocks being arranged with their complementary ledges overlapping, interfitting projections and recesses on the sides of the block, and sealing material between the sides of adjacent blocks and between the overlapping ledges.

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