No. 635,906. Patented Oct. 31, 1899.

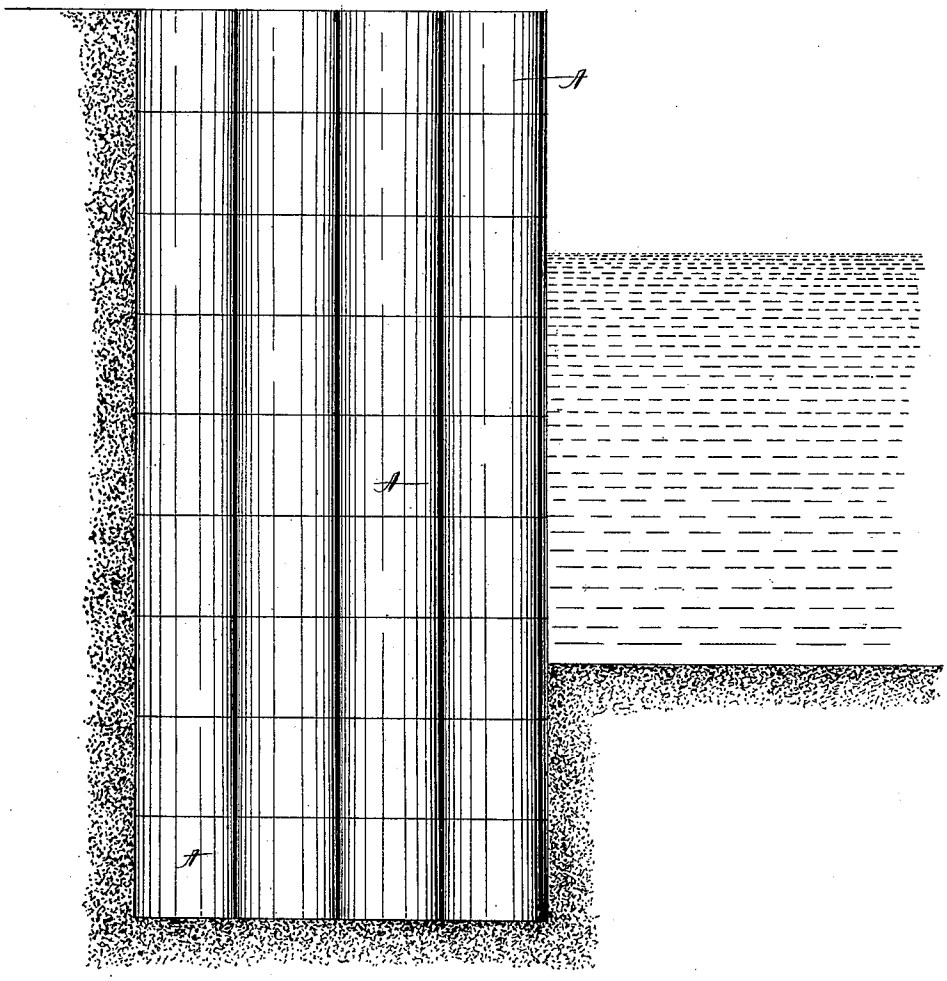
J. T. WILSON.

CONSTRUCTION OF DOCKS, &c.

(Application filed Apr. 18, 1898.)

(No Model.) 6 Sheets—Sheet 1.

FIG. 1.



WITNESSES
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6 Sheets—Sheet 2.

FIG. 2.

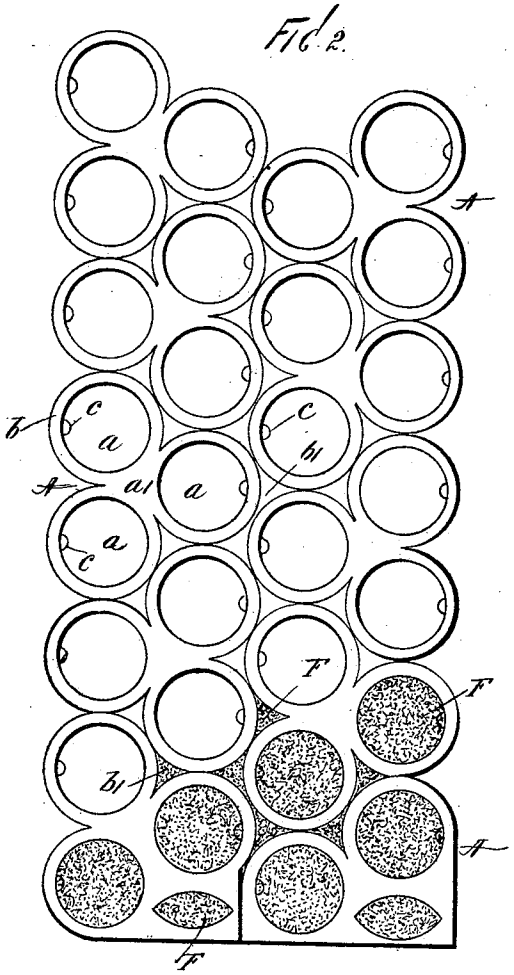


FIG. 3.

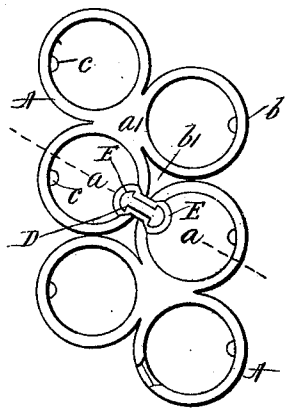


FIG. 4.

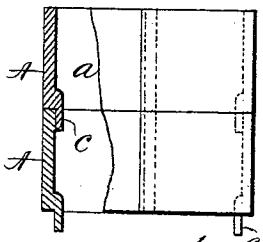
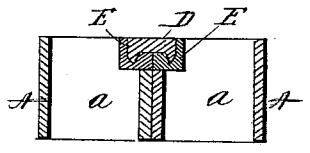


FIG. 5.



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FIG. 6.

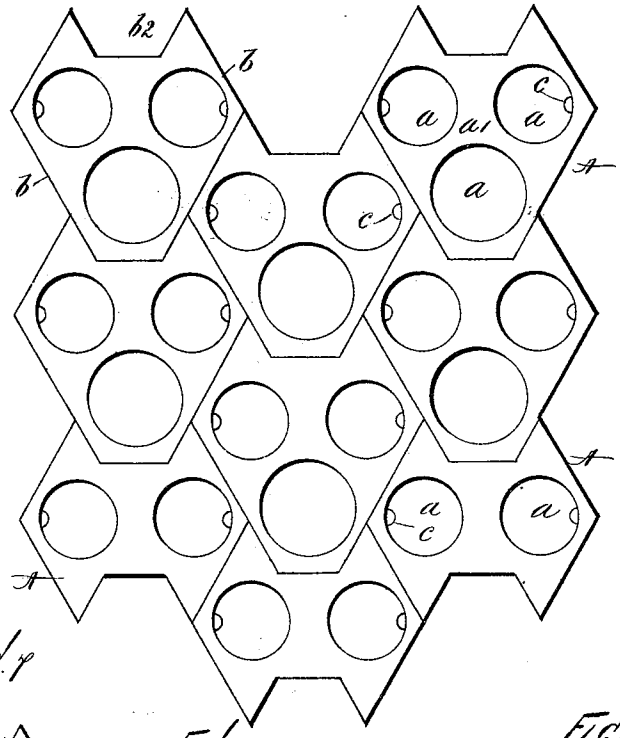


FIG. 7.

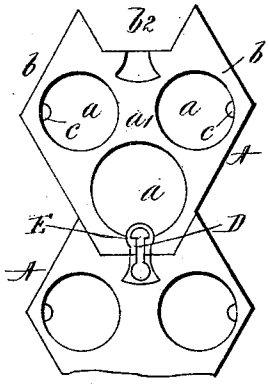


FIG. 8.

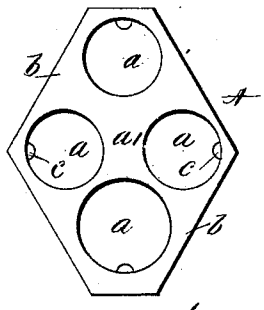


FIG. 9.

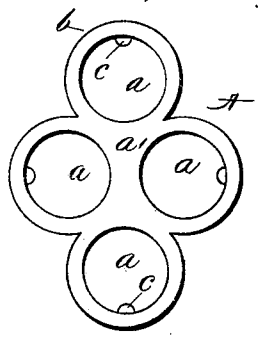
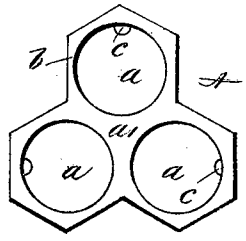


FIG. 10.



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FIG. 11.

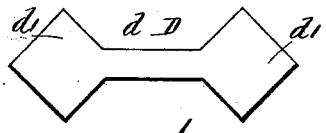


FIG. 15.

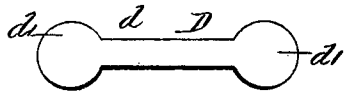


FIG. 12.

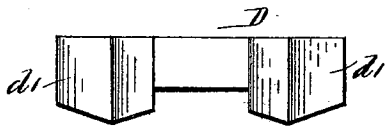


FIG. 16.

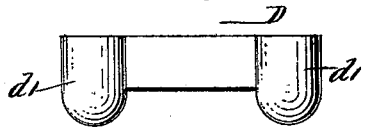


FIG. 13.

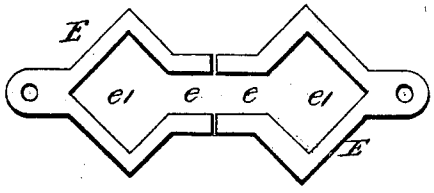


FIG. 17.

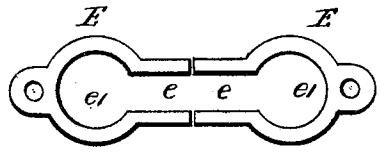


FIG. 14.

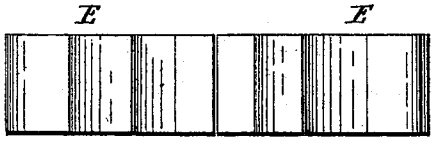


FIG. 18.

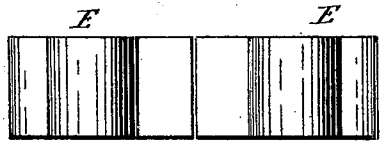
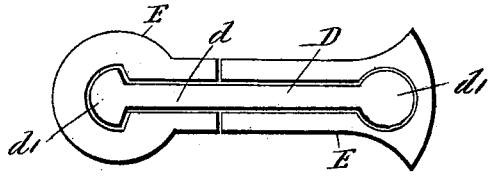


FIG. 19.



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(Application filed Apr. 18, 1898.)

(No Model.) 6 Sheets—Sheet 5.

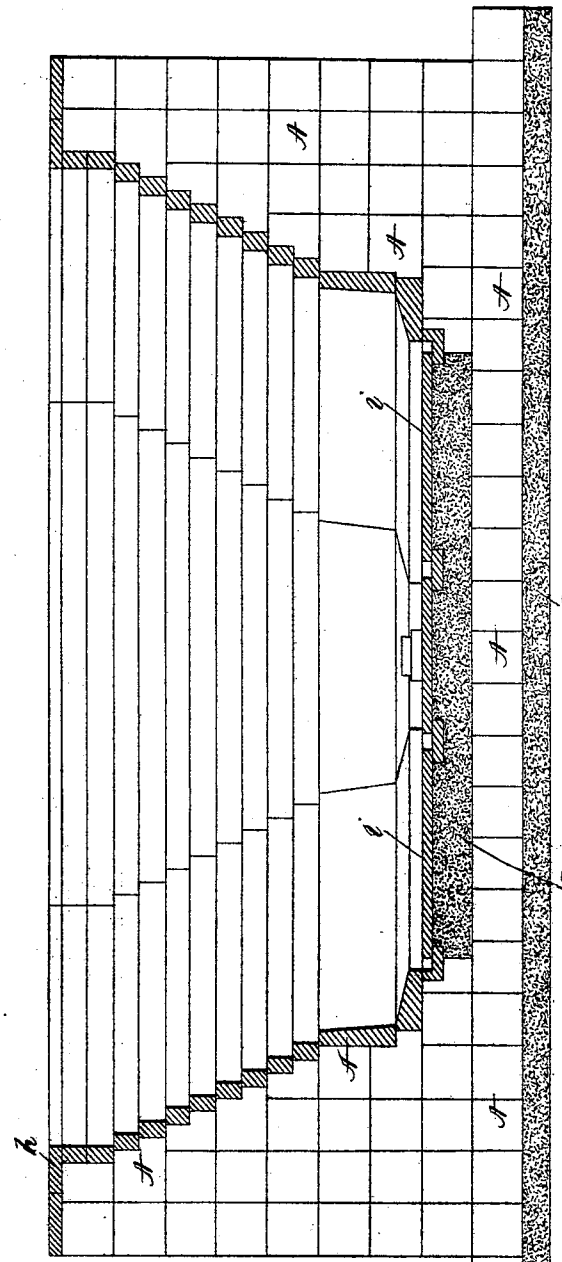


FIG. 20.

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CONSTRUCTION OF DOCKS, &c.

(Application filed Apr. 15, 1898.)

(No Model.) 6 Sheets—Sheet 6.

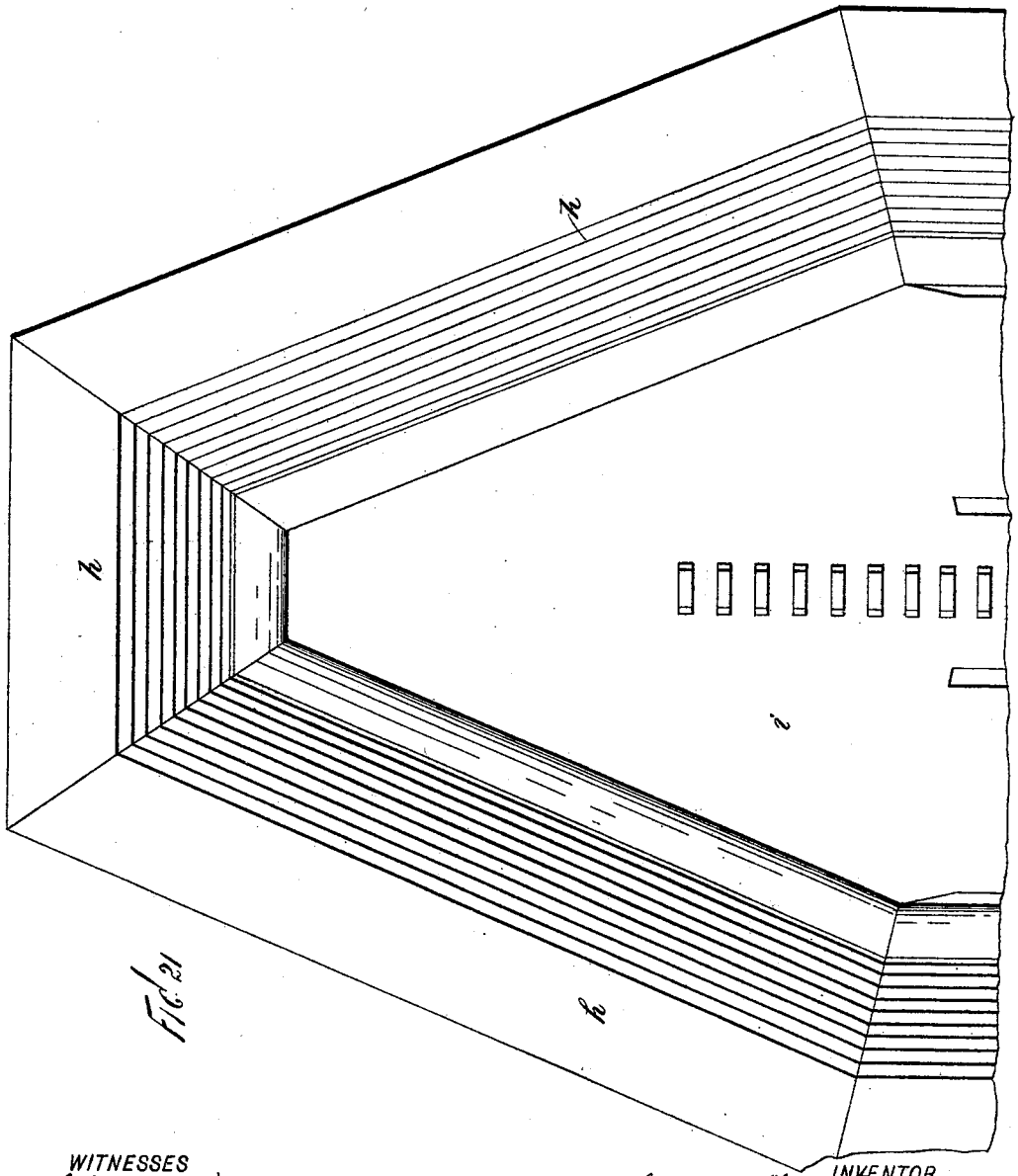


FIG. 21.

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UNITED STATES PATENT OFFICE.

JAMES THOMPSON WILSON, OF NEW YORK, N. Y.

CONSTRUCTION OF DOCKS, &c.

SPECIFICATION forming part of Letters Patent No. 635,906, dated October 31, 1899.

Application filed April 18, 1898. Serial No. 677,996. (No model.)

To all whom it may concern.

Be it known that I, JAMES THOMPSON WILSON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in the Construction of Docks and Similar Works, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in the construction of harbor-works, docks, dry-docks, wharves, breakwaters, sea-walls, bulk-heads, and other submarine work of an analogous character; and the object of my invention is to provide simple and improved means whereby such works may be conveniently and inexpensively and rapidly constructed without the necessity for erecting temporary caissons or coffer-dams during the building operation.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by the same letters of reference in each of the views, and in which—

Figure 1 illustrates in side view a bulk-head constructed according to my invention. Fig. 2 is a top or plan view of said bulkhead. Fig. 3 is a detail top or plan view showing the method of anchoring the sections together on a horizontal plane. Fig. 4 is a detail sectional view showing the method of keying the sections together on a vertical plane. Fig. 5 is a detail sectional view taken on the plane of one of the anchors or connections. Fig. 6 is a top or plan view illustrating a modified form of the sections or blocks. Fig. 7 is a detail top or plan view showing a modified form of anchor device in connection with the form or section of block illustrated in Fig. 6. Figs. 8, 9, and 10 are detail or top plan views illustrating, respectively, different modified forms of the sections or blocks. Fig. 11 is a detail top or plan view of one form of anchor device. Fig. 12 is a detail side view of the device illustrated in Fig. 11. Fig. 13 is a detail top or plan view of the sectional box adapted for the form of anchor shown in Fig. 11. Fig. 14 is a detail side view of the box shown in Fig. 13. Fig. 15 is a detail top or plan view of a modified form of anchor device. Fig. 16 is a detail side view of the device shown in Fig. 15. Fig. 17 is a detail top or plan view of the form of sectional box adapted for the anchor device shown in Fig. 15. Fig. 18 is a detail side view of the box shown in Fig. 17. Fig. 19 is a detail top or plan view showing another modified form of anchor seated in its corresponding sectional box. Fig. 20 is a transverse sectional view illustrating a dry-dock constructed according to my invention and improvements, and Fig. 21 is a detail plan view of the end portion of the dry-dock illustrated in Fig. 20.

My invention involves the erection of works, such as are above enumerated, with a series of blocks or sections forming the foundations and superposed one above the other and in parallel position, said blocks or sections being interlocked in their contiguous or composite position, so that they conjointly form a solid and compact mass or fabric of any desired extent or continuous projection. The sections or blocks may be formed of iron and concrete or of concrete only, cast into various shapes as desired and preferably of tubular form, whereby said blocks or sections in their assembled position form a framework adapted to be filled in after the blocks or sections are built and set with concrete, earth, or other adapted material.

Referring to the drawings, A designates blocks or sections, which are of tubular construction, as shown at *a*, and may be cast or otherwise formed of iron and concrete or of concrete or iron only in any suitable or adapted form. The tubular structure preferably embodies a series of continuous open chambers connected by a web or partition *a'*, as shown in the drawings.

I have herein illustrated a variety of forms in which the blocks or sections A may be constructed. In Fig. 2 is shown a form consisting of three cylinders in triangular and connected arrangement, whereby segmental sides or exterior surfaces *b* are provided, and when the blocks are fitted together in contiguous position triangular interstices *b'* will be formed between the cylindrical portions of the different blocks or sections. (See Figs. 2 and 3.) In Fig. 6 I have illustrated a form of the

blocks or sections in which they are formed with relatively angular sides or surfaces b and recesses b^2, the relative construction and arrangement being such that the blocks or sections correspond and fit closely together when they are assembled or massed in contiguous position without the formation of interstices between the separate blocks or sections. In Fig. 8 I have shown an approximately triangular form of the block or section, having flat angular sides or exterior surfaces b, while in Fig. 9 I have shown a construction of the block or section with four cylindrical portions, producing segmental or curved sides or exterior surfaces b, and in Fig. 10 I have shown a form of construction in which the respective tubular parts a are formed with angular outer walls or surfaces b. It will be noted that in the form or construction shown in Fig. 6, having the recesses b^2, no interstices will be produced between the blocks when they are fitted together, but they will relatively interlock by reason of said recesses. The forms illustrated in Figs. 8 and 10 will not produce interstices, while the form illustrated in Fig. 9 will produce the triangular interstices b'.

In the practical construction of submarine work according to my invention the blocks or sections A are superposed one above the other, as shown in the drawings, to conjunctively form a continuous vertical projection extending to any desired height, and said superposed series of blocks or sections are conjunctively arranged or built side by side, so that they all collectively form a solid or compact mass or fabric of the desired projection or extent. When the blocks or sections are thus assembled or massed, their tubular chambers a may be filled with concrete, earth, or other suitable material, and in the case of the forms having the interstices b' these interstices may also be thus filled, whereby the whole produces in its finished condition a compact homogeneous block which will effectively serve the purposes for which my invention is intended and which will successfully resist disintegration.

The superposed blocks or sections A are relatively and respectively provided with keys or projections c, which project within the tubular chambers or recesses a and depend therefrom, so that they are received within the tubular chambers a of the next block or section, as shown in Fig. 4, and the superposed blocks or sections are thus locked in vertical position.

To provide for the interlocking of the separate blocks or sections laterally or in a horizontal plane, anchors D, preferably formed of iron or other metal, are arranged to extend transversely between the respective blocks or sections and are keyed into sockets or boxes E, which may be cast or otherwise secured upon the blocks. These anchors may embody a stem d and end heads d' d', said heads being arranged to depend below the stem, as shown in the drawings, so that they form virtually an engaging hook. The anchor boxes or sockets preferably comprise two sections, as shown, which are respectively secured in the adjoining walls of the separate blocks or sections A and have recesses e and e', respectively conforming in contour to the stem and heads of the anchor D. The relative construction and arrangement is preferably such that the top plane of the anchor and its retaining box or socket intersects the top plane of the block or section A, as shown in Fig. 5. These anchors and their boxes or sockets may be of any suitable form or contour. For instance, they may be constructed, as shown in Figs. 3 and 5, with a rounded head at the ends of the anchor, or they may be constructed, as shown in Figs. 11 to 14, inclusive, with an angular head at the ends of the anchor and a corresponding angular recess in the boxes or sockets. The anchors may have circular heads, as shown in Figs. 15 and 16, the boxes or sockets being correspondingly formed, as shown in Figs. 17 and 18. In Fig. 19 I have shown a further modification of the anchor, in which one end is provided with a circular head similar to that illustrated in Figs. 15 and 16 and the other end is provided with a curved head similar to that illustrated in Fig. 3, the sections of the box or socket being correspondingly recessed, and in Fig. 7 I have illustrated the form of anchor device as shown in Fig. 19 in connection with the angular faced and recessed blocks or sections.

The filling, which is placed in the tubular sections or compartments of the blocks and into the interstices between the blocks or sections for the purpose of producing a solid or homogeneous mass or fabric, is indicated at F, Fig. 2.

It will be understood that in the construction of submarine works of the character hereinabove mentioned from the improved interlocking blocks or sections, as described, exterior facing-walls—such as piers, abutments, inverts, sills, altars, and copings, such as are now generally employed in works of this description—will be formed of granite or other hard stone best suited or adapted for the purpose, my improved blocks or sections being used for the filling or in lieu of filling, and in the construction of dry-docks or analogous structures concrete bases may be employed in connection with the interlocking sections as comprised in my invention.

In Figs. 20 and 21 I have illustrated a dry-dock as constructed with my improved blocks or sections. In thus carrying out my invention a concrete base g may be first provided, upon which the blocks or sections A are set in the desired formation to produce a compact homogeneous mass or fabric constituting the body of the dock, as shown, this being faced with stone or other desired material, as at h, and the bottom of the dock may be formed by a similar stone facing or floor i set upon a concrete base k, which is superposed

above a base or bottom series of the blocks or sections A.

The operation and advantages of my invention will be readily understood by those skilled in the art to which it appertains. It provides a simple and convenient construction for various submarine works which can be readily and inexpensively built and which will effectively resist tendency toward disintegration or decay.

I do not desire to be understood as restricting myself to the exact details of construction and arrangement as herein shown and specified, as it is obvious that numerous variations and modifications may be made without departing from the spirit and scope of my invention. I therefore reserve the right to all such variations and modifications as properly fall within the spirit and scope of my invention and the terms of the following claims.

Having fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The herein-described means for building dry-docks, wharves, breakwaters and similar structures, which consist of a plurality of blocks or sections similar in form in cross-section and adapted to be arranged in vertical and horizontal series, and provided with a plurality of vertical bores or passages, the bores or passages in the blocks or sections of each horizontal series being adapted to register with the bores or passages in the blocks or sections of the horizontal series below it, devices for locking the blocks of one horizontal series in connection with those of the series below it, so as to prevent lateral movement of the vertically-arranged blocks and means for locking the blocks or sections of each horizontal series together, consisting of irregular notches or recesses formed in the tops, and the adjacent sides thereof, and key-blocks of similar form adapted to be inserted into said notches or recesses, substantially as shown and described.

2. The herein-described means for building dry-docks, wharves, breakwaters and similar structures, which consist of a plurality of blocks or sections similar in form in cross-section and adapted to be arranged in closely-fitting horizontal and in vertical series, and provided with a plurality of vertical bores or passages, the bores or passages in the blocks or sections of each horizontal series being adapted to register with the bores or passages in the blocks or sections of the series below it, devices for locking the blocks of one horizontal series in connection with those of the series below it, so as to prevent lateral movement of the vertically-arranged blocks and means for locking the blocks or sections of each horizontal series together, consisting of irregular notches or recesses formed in the tops and adjacent sides thereof, and key-blocks of similar form adapted to be inserted into said notches or recesses, substantially as shown and described.

3. The herein-described means for building dry-docks, wharves, breakwaters and similar structures, which consist of a plurality of blocks, all of which are of the same form in cross-section and the sides of which are plane or straight, whereby said blocks are adapted to be formed into a wall, said blocks being also adapted to be placed in vertical and horizontal series, and each of said blocks being provided with a plurality of vertical bores or passages, the bores or passages in the blocks of one series being adapted to register with those in the blocks of the series below it, devices for locking the blocks of one horizontal series in connection with those of the series below it, so as to prevent lateral movement of the vertically-arranged blocks, the blocks of each horizontal series being also provided with means whereby they may be locked together, consisting of irregular cavities or recesses formed in the top and adjacent sides thereof, and key-blocks fitted into said cavities or recesses, substantially as shown and described.

4. The herein-described means for building dry-docks, wharves, breakwaters and similar structures, which consist of a plurality of blocks, all of which are of the same form in cross-section, whereby said blocks are adapted to be formed into a wall, and to be arranged in vertical and horizontal series, each of said blocks or bricks being provided with a plurality of vertical bores or passages, the bores or passages in the blocks of one series being adapted to register with those in the blocks of the series below it, the blocks of one series being provided on their under sides with downwardly-directed projections which are adapted to enter the blocks of the series below it, and the blocks of each horizontal series being also provided with cavities or recesses formed in the top and adjacent sides thereof, and key-blocks which are adapted to be fitted into said cavities or recesses, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 15th day of April, 1898.

JAMES THOMPSON WILSON.

Witnesses:

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T. M. CARR.