June 2, 1931. F. M. SUTTON 1,807,943

CONCRETE FORM

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Fig. 1.

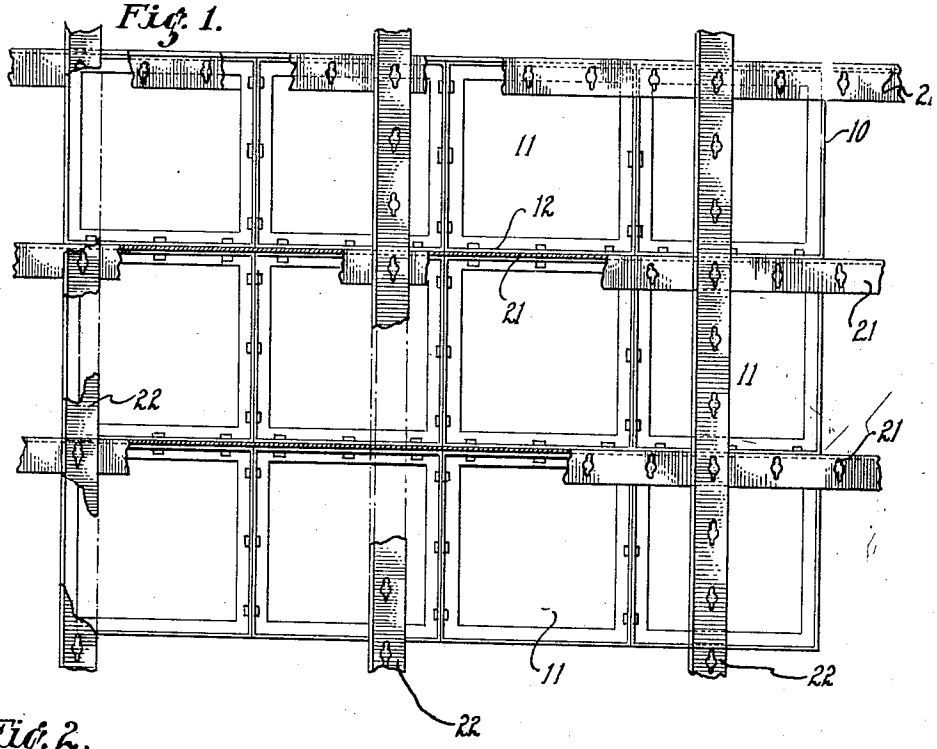


Fig. 2.

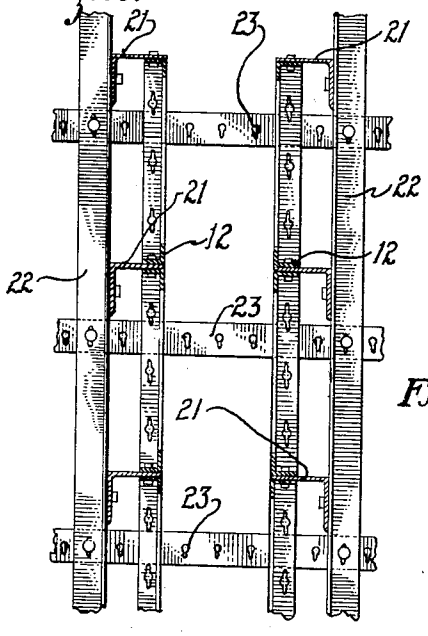


Fig. 8.

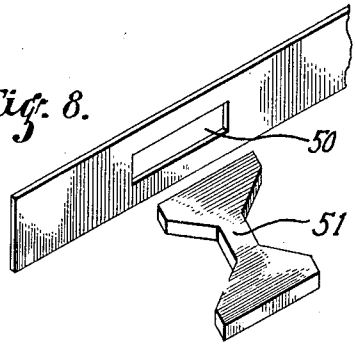
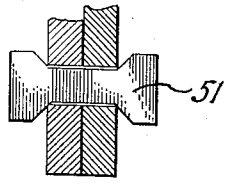


Fig. 7.



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Fig. 3.

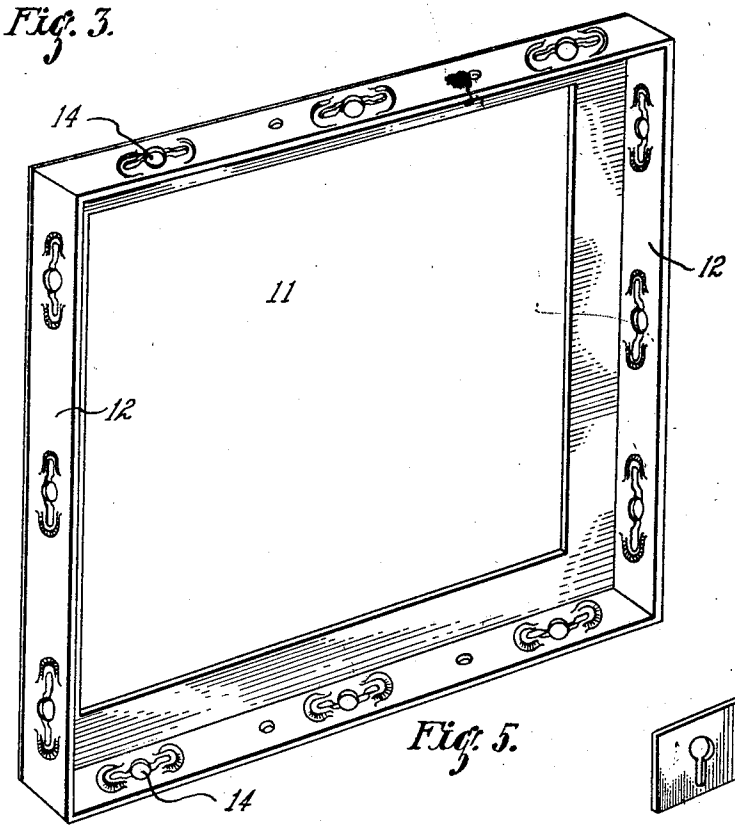


Fig. 5.

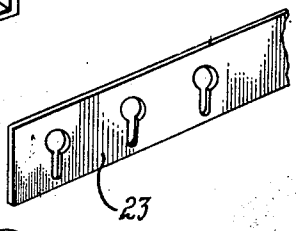


Fig. 6.

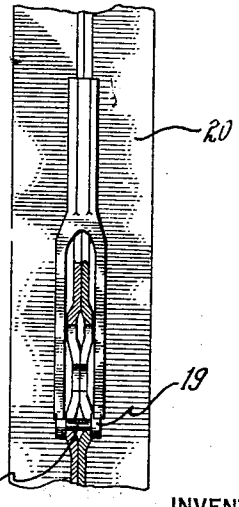
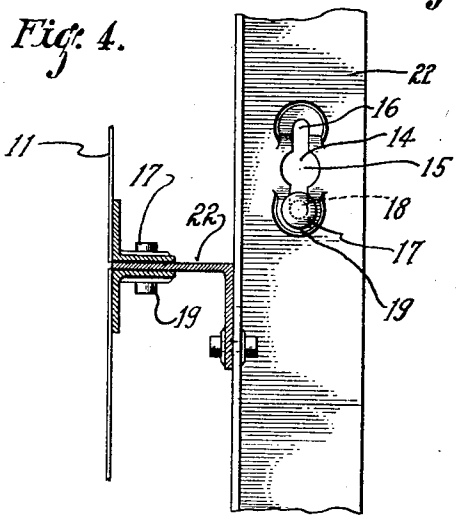


Fig. 4.



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CONCRETE FORM

Application filed July 23, 1928. Serial No. 295,897.

This invention relates to sectional steel forms for use in molding walls, piers, etc., in concrete construction work.

It is the principal object of the present invention to provide an improved and simplified sectional form construction of the character referred to which is composed of units of simple construction and capable of being firmly but detachably connected so that a form of any desired dimensions may be expeditiously erected for use and thereafter disassembled for transportation and repetitive use.

In carrying out this object into practice, I provide a plurality of similar facing sections or units capable of being assembled edge to edge to form the facing of the mold. This facing is stiffened by horizontal and vertical stiffenings. All of the parts are formed with key slots so spaced that the slots in the different parts will align upon assembly. Means are provided which cooperate with these slots in firmly but detachably connecting the parts. The formation of the units and the distribution of the key slots is such that the size of the mold which can be constructed is only limited by the number of units provided. The mold structure is principally adapted for forming molds for walls and piers but it can be arranged into mold structures for various other purposes.

One form which the invention may assume is exemplified in the following description and illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a fragmentary view in side elevation of a mold structure embodying the preferred form of the invention.

Fig. 2 is a fragmentary view in transverse section of a mold structure for concrete walls.

Fig. 3 is a perspective view of one of the facing sections used in erecting the mold.

Fig. 4 is a fragmentary view in section showing the manner in which the stiffeners are connected to each other and to the facing sections.

Fig. 5 is a fragmentary view in perspective of one of the transverse connecting straps.

Fig. 6 is a view partially in elevation and partially in section showing the tool utilized in positioning the links which connect the units together.

Figs. 7 and 8 are views of a modified form of connecting means for connecting the elements of my form or mold together.

Referring more particularly to the accompanying drawings, 10 indicates a concrete mold or form assembled of various units firmly but detachably connected so that the form may be readily erected to desired dimensions and then disassembled for transportation and re-use. The form comprises a sectional facing suitably stiffened by vertical and horizontal stiffeners.

The sectional facing of the form is composed of facing sections of like geometrical outline and dimensions, the dimensions being such that these sections can be handled with ease. Each facing section is indicated by the numeral 11 and the preferred construction of the facing sections is most clearly illustrated in Fig. 3. In the present instance I have disclosed the sections as being perfectly square and of equal dimensions but they may be oblong or otherwise shaped and of different dimensions if desired.

I prefer the facing sections to be constructed, as illustrated in Fig. 3, of a flat plate of suitable metal having a flange 12 projecting at right angles to its plane surface at its marginal edges. This flange 12 may be formed by riveting or otherwise suitably fastening a margin of angle iron about the perimeter of the plate. However, I may prefer to turn the marginal edges of the plate to form the flange 12 and stiffen the plate by ribbing the same and then eliminating the necessity of using an angle iron boundary. In this latter instance the plates would be formed by suitable die operations.

The flange 12 of each facing section is formed with a plurality of what I prefer to term key slots 14. These slots are spaced at regular intervals and each comprise a circular opening 15 from diametrically opposite sides of which slots 16 emanate. The slots 16 are of a width approximately one-half the diameter of the circular central opening 15. The flange at the ends of the slots is slightly swedged to form offsets at the ends of the slots

16 for a purpose which will be presently described.

The key slots in the flanges of the facing sections, as previously described, are disposed at regular intervals and are located in exactly the same place on all of the facing sections. Therefore, when the facing sections are arranged edge to edge, the key slots in the contiguous edges of the sections will align.

I intend to provide means for cooperating with the key slots for firmly but detachably connecting the sections together. This means includes what I prefer to term links 17. These links each comprise a cylindrical shank 18 of a diameter agreeing with the width of the slots 16 of the key slots 14. At the ends of the shank are cylindrical heads 19 of a diameter slightly less than the central opening 15 of the key slots 14 but somewhat greater than the width of the slots 16. The distance between the heads 18 agrees with the distance between the offset surfaces of adjacent flanges so that the link may be inserted through the enlarged central opening 15 and then forced into engagement with one of the slots 16. In this position the inner faces of the heads 19 will engage the offset surfaces of the flanges and firmly clamp the sections together.

Therefore, after the sections are properly arranged relative to each other, links 17 may be inserted through the central openings of the key slots and then removably driven into the slots 16 to clamp the sections together. As the heads 19 are larger than the width of the slots 16, the sections will be firmly secured together. Likewise, engagement of the faces of the heads of the links will engage the offsets in the flanges and produce a clamping action, clamping the sections together. A bifurcated tool 20, as illustrated in Fig. 6, may be utilized to drive the links in place and to remove them.

From the foregoing it is obvious that a mold facing of any desired area may be erected by assembling the required number of facing sections.

It is necessary, however, to suitably stiffen the form composed of the sections. This is accomplished by providing units of horizontal stiffeners 21 which are formed of angle iron. The flanges of these stiffeners are formed with key slots the same as those formed in the flanges of the facing sections, and the spacing of the key slots in one flange of the horizontal stiffeners 21 is such that it will align with the key slots in the horizontal flanges of the connected facing sections. I intend to interpose this flange of the horizontal stiffeners between the contiguous horizontal flanges of the facing sections and simultaneously connect the horizontal flanges of the facing sections and the horizontal stiffeners together.

The links 17 employed for this purpose are slightly longer than those utilized in connecting the vertical flanges of the facing sections due to the additional thickness of the flange of the horizontal stiffeners.

The manner in which the horizontal stiffeners 21 and the facing sections are connected is illustrated in Fig. 4 of the drawings. The horizontal stiffeners are supplemented and connected together at regular intervals by vertical stiffeners 22 which are also formed of angle iron or channel. The flanges of the vertical stiffeners are also key slotted at proper intervals to enable them to be connected with the horizontal stiffeners 21 by links 17, as illustrated in Figs. 2 and 4 of the drawings. The spacing between the key slots in one flange of the vertical stiffeners 22 will be equal to the spacing between the horizontal stiffeners 21.

When erecting a form for a wall, the two sides of the form may be connected by what I prefer to term straps 23 formed of strap iron or other suitable material. These straps 23 are key slotted at regular intervals to enable adjustable connections to be made between them, the vertical stiffeners and the facing sections of the two sides of the form, as illustrated in Fig. 2. By slotting the transverse straps 23 at regular intervals or at the intervals equal to the distance between the slots in the vertical stiffeners and those in the ends of the facing sections lying in the same plane, the sides of the form may be disposed a distance apart suitable to accommodate different wall thicknesses.

In erecting a form, the units thereof are constructed as shown in the drawings and they are assembled together and detachably connected by insertion of the links 17. It is obvious that the form may be erected to form a mold for walls, piers and similar structures by proper arrangement and disposition of the units. After the concrete has set, the links 17 may be removed and the form disassembled for transportation. Thus, the form may be used any number of times and need not be discarded after each use as is the practice in connection with wooden form construction now in common use.

In Figs. 7 and 8 I show another connecting means for connecting the elements of my form. In these figures the elements are formed with rectangular slots 50 and the link is provided with a rectangular head 51 just slightly less than the opening so that the link may be inserted through the aligned openings of adjacent elements. The inner faces of the heads 51 of the links are tapered so that when the links are inserted through the openings and revolved ninety degrees, a clamping action will be effected to clamp the connecting elements together.

I desire to point out that the units of my form are very simple and can be inexpen-

sively produced and as it can be used for an indefinite period of time it is much more economical than the forms used hitherto. Also, the form can be erected for use much more expeditiously than constructing wooden forms now most commonly used.

While I have shown the preferred form of my invention, it is to be understood that various changes may be made in its construction by those skilled in the art without departing from the spirit of the invention as defined in the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A concrete mold structure comprising a plurality of rectangular facing sections each formed with a peripheral flange, said sections being similar in outline and dimensions, the flanges of said sections being formed with key slots at regular intervals adapted to align when the sections are arranged edge to edge, angle iron horizontal stiffeners, one flange of which being adapted to be interposed between contiguous flanges of the sections, said flange being formed with key slots aligning with key slots in the flanges of the sections, vertical stiffeners, said vertical stiffeners and horizontal stiffeners being formed with aligning key slots, and means cooperating with the key slots of the various elements to firmly but detachably connect the elements together.

2. A concrete mold structure comprising a plurality of rectangular facing sections each formed with a peripheral flange, said sections being similar in outline and dimensions, the flanges of said sections being formed with key slots at regular intervals adapted to align when the sections are arranged edge to edge, angle iron horizontal stiffeners, one flange of which being adapted to be interposed between contiguous flanges of the sections, said flange being formed with key slots aligning with key slots in the flanges of the sections, vertical stiffeners, said vertical stiffeners and horizontal stiffeners being formed with aligning key slots, means cooperating with the key slots of the various elements to firmly but detachably connect the elements together, and transverse members having key slots at spaced intervals adapted to align with key slots in the vertical stiffeners whereby to connect two facing structures of a mold.

3. Means for connecting contiguous structural elements, each of said elements having a key slot formed therein, the key slots of said elements aligning and contiguous, said key slots each comprising an enlarged central opening and narrow slots emanating therefrom, a connecting link having enlarged heads adapted to pass through said enlarged opening of the key slots and driven into engagement with said narrow slots to clamp the two elements together.

4. Means for connecting contiguous structural elements, each of said elements having a key slot formed therein, the key slots of said elements aligning and contiguous, said key slots each comprising an enlarged central opening and narrow slots emanating therefrom, a connecting link having enlarged heads adapted to pass through said enlarged opening of the key slots and driven into engagement with said narrow slots to clamp the two elements together, the surfaces of said elements contiguous to said narrow slots being offset to engage the heads of the link to form a clamping action between the elements, the heads of the link being adapted to pass through the enlarged portion of the key slot but not through the narrow slots emanating therefrom.

FRANK M. SUTTON.