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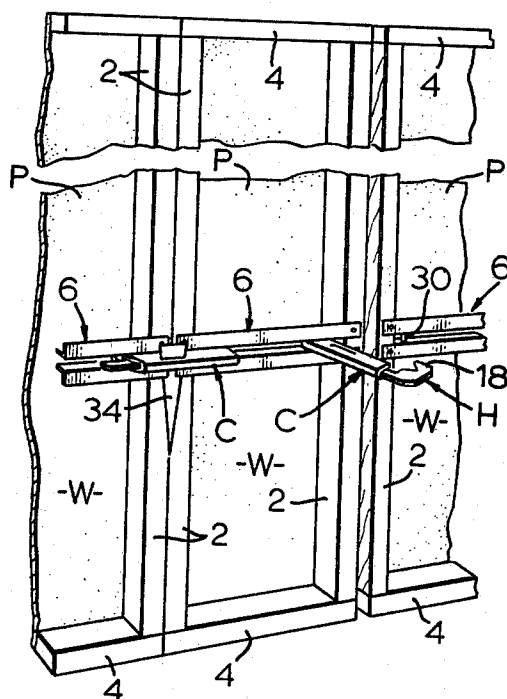
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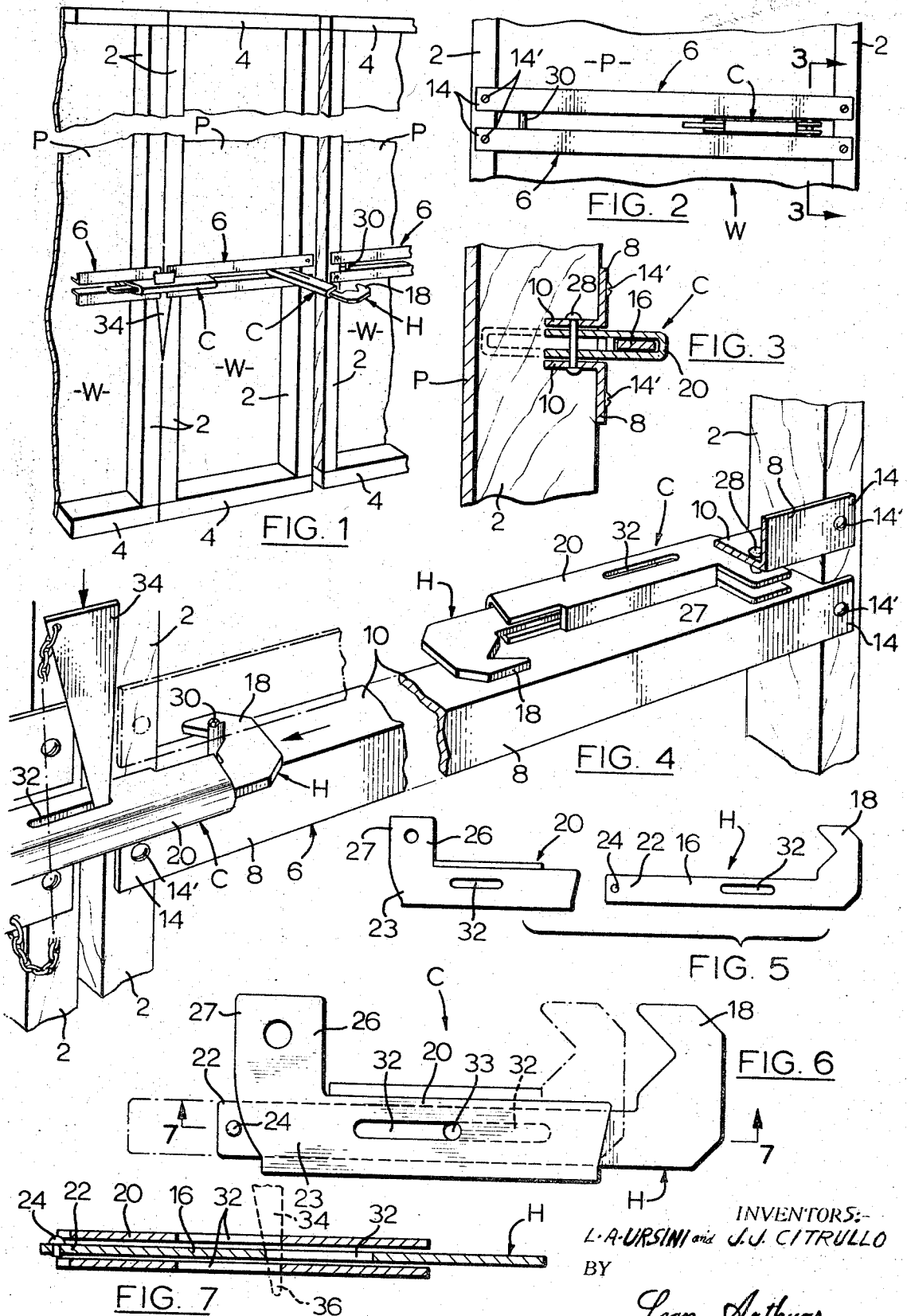
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[54] **CONCRETE WALL FORMS**
7 Claims, 7 Drawing Figs.

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ABSTRACT: A modular section assemblable with other like sections for erecting forms for concrete walls; said section having spaced walers and a clamp pivoted for movement through the walers between stored and functional positions on the interior and exterior respectively of said section.





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CONCRETE WALL FORMS

The invention relates to modular wall sections as used to erect forms for concrete walls or the like.

A wall section as herein visualized consists of a rectangular panel—generally on the order of about eight feet in height and two and one-half feet in width—which is mounted and supported on a fairly sturdy frame of heavy stock—e.g.: 2 inches x 4 inches—; the panel and frame being peripherally congruent and codimensional so that, when it is mounted thereon, the panel will substantially completely overlie a surface of the frame herein arbitrarily designated as its front surface. Wall sections as herein visualized are intended to be capable of assembly in abutting side edge to side edge relation to provide continuous walls for a concrete form as aforesaid.

The frame of a said wall section consists, conventionally, of a pair of vertical studs joined together in a known manner in appropriately spaced and parallel relation by transverse upper and lower headers. As is customary in the structures herein visualized, said studs are also connected at the back of the frame, being that surface thereof which is opposite to the one mounting the panel, by at least one pair of spaced bars known as walers disposed intermediate the headers aforesaid. Each said waler is formed of angle material so oriented and located on the wall section as to provide a pair of closely spaced, mutually confronting flanges which project into the interior of the frame towards the panel; said flanges being supported in this position by integral webs which are secured to the studs.

As will be appreciated, said wall sections are required to be coupled together relatively closely and firmly to integrate them in their wall-forming relation. Such coupling has heretofore been effected by means of clamps, so called, respectively engaging adjacent wall sections and drawing them together by means of cooperating wedge devices.

In the past, the clamps aforesaid did not form part of the wall sections but were comprised of separate elements intended to be assembled and disassembled with each other and with the wall sections on the job whereby they became vulnerable to loss by misplacement, theft, or the like. A main object of the invention is, therefore, to provide wall sections aforesaid equipped with such clamps integrally attached thereto; a collateral object of the invention being to provide a clamp suitable for such purpose.

A further object of the invention is to provide wall sections with attached clamping facilities which, when out of use, will be unobtrusive and will not interfere with the storage or transportation of the said sections.

It is, of course, another object of the invention to provide such structure embodying an efficient clamp as aforesaid, capable of being rapidly placed into use or withdrawn from use.

The invention generally achieves the foregoing and other more or less broad objects, hereinafter in part stated and in part obvious, by the provision of a wall section equipped with walers as aforesaid and a preassembled clamp which is thin enough to move between the walers to a stored position inside the frame and an operative position on the outside thereof; said clamp being pivoted to the walers for movement as aforesaid and having a hook part for engagement with a post or like abutment on an adjacent wall section and said hook part being telescopic with respect to the remainder of the clamp as more particularly described in the hereinafter following description of the elements, parts and principles constituting the invention of which a preferred embodiment is illustrated by way of example only in the hereunto annexed drawing wherein like reference numerals denote like parts of the invention throughout the several views of the drawing and wherein:

FIG. 1 is a perspective view taken from the back of a wall section as herein visualized and flanked on each side by a part of another similar wall section;

FIG. 2 is an enlarged elevational view of the central portion only of the wall section of FIG. 1;

FIG. 3 is a section along the line 3-3 of FIG. 2;

FIG. 4 is a broken perspective view of the walers carried by a said wall section and part of an adjacent wall section and a pair of clamps as visualized by the invention;

FIG. 5 is a plan view of the two main parts of the present clamp;

FIG. 6 is a view similar to FIG. 5 showing the two said parts in assembly; and

FIG. 7 is a section along the line 7-7 of FIG. 5.

Typical wall sections W as used to erect forms for walls poured of concrete or other similar composition are illustrated generally in FIG. 1. As previously indicated, a said wall section W is comprised of a pair of studs 2-2 joined together in spaced, parallel relation by top and bottom headers 4-4 forming an open rectangular frame. The stock of which said studs and headers are formed is fairly large in cross section—e.g.: 2 inches x 4 inches—thereby imparting significant depth as well as strength to said frame. A panel P having the peripheral form and planar dimensions of the frame is coincidentally mounted on one of its surfaces, hereinafter arbitrarily designated as its front; the opposite surface of the frame being designated as its back.

Intermediate said headers 4-4, the said studs 2-2 are also joined by paired walers 6-6; each said waler 6 being of angular stock having, in cross section, a web 8 and an integral flange 10 in the aforesaid angular relation to each other. Each said waler 6 is mounted on the studs 2-2 by the web ends 14-14 which are secured to the said studs 2-2 in any suitable manner as by screws 14'-14'; the paired walers 6-6 being mounted as aforesaid so that their flanges 10-10, slightly shortened for the purpose, extend into the interior of the frame in spaced parallel relation; the space between them being scaled to permit the clamp C, to be described, to pass freely therethrough between a stored, inoperative position inside the frame and an operative position outside of the frame as best shown in FIG. 3.

The clamp C of the invention is comprised of a flat hook element H preferably of heavy metal having a long narrow tang 16 of uniform cross section throughout its length with a widened hook 18 at one of its ends. Said tang 16 is telescopically slidable in a cross-sectionally, codimensional mating sheath 20 which is open at both ends so that, when the tang 16 is disposed therein, the hook 18 will project from one end thereof while the tang tail 22 will project from the other end which is identified by reference numeral 23; said tail 22 being provided with a stop 24 which prevents its passage through the sheath 20. Since hook 18 is also too large to pass through sheath 20, the hook element H is thereby rendered captive therein; the relative dimensions of tang 16 and sheath 20 nevertheless affording liberal scope for reciprocal movement of hook element H in sheath 20 between said stop 24 and the hook 18.

Sheath 20 is more or less crank-shaped, having an integral coplanar arm 26 which extends at a 90° angle more or less from its said end 23. The free end 27 of said arm 26 is pivotally sandwiched as at 28 between waler flanges 10-10 at one side of wall section W—i.e.: adjacent one of its studs 2; the entire clamp C being swingable on said pivot 28 between the various operative and nonoperative positions shown in FIGS. 1, 2, 3 and 4. More specifically, said clamp C may be swung on pivot 28 between a nonoperative, storage position in the interior of the frame as best shown in FIG. 3 as well as in FIGS. 1, 2 and 4 and an operative position exteriorly of the said frame as shown in the same views.

Adjacent the stud 2 opposite to that near which the clamp C is mounted, an abutment 30 is provided between the waler flanges 10-10 being so disposed as to be capable of engagement by the hook 18 of a clamp C mounted on an adjacent and similar wall section W.

It will be recalled that the hook element H is reciprocable in sheath 20 whereby its hook 18 is movable between extended and indrawn positions relative to the sheath 20 as shown, respectively, in full and dotted lines in FIG. 6. For convenience, the clamp C may be said to be in an "expanded" state when the hook element H is extended and to be in a "retracted" state when the hook element H is withdrawn.

contracted" state when it is indrawn with respect to the sheath 20.

From a consideration of the structure at the left side of FIG. 4, it will be apparent that the parts are dimensioned and inter-related so that, when the clamp C carried by one wall section W is swung into an operative position relative to an adjacent wall section, its hook 18 will be disposed in engagement or, at least, poised for engagement with the abutment 30 of said adjacent wall section W.

A situation of this general nature is illustrated at the left side of FIG. 4 which shows a pair of wall sections W-W slightly spaced apart with the clamp C carried by one of them disposed in operative relation relative to the other, i.e.: with its hook 18 engaging abutment 30 of the other wall section W. By wedging means to be described, said clamp C is then contracted to draw together the two wall sections W-W into the side edge to side edge relation shown at the left-hand side of FIG. 1.

Said hook element H and sheath 20 are each provided with elongated slots 32-32 which overlap each other minimally in the expanded condition of clamp C and are in substantially full registration with each other in the contracted state thereof, thus providing a passageway 33 which is dimensionally variable between the minimal opening shown in full lines in FIG. 6 and a maximum opening which is equivalent to the full length of the shorter slot 32, if any, as will be understood from FIGS. 6 and 7.

The invention further visualizes a triangular wedge 34 of plate material having an apex 36 small enough to enter said passageway 33 in the expanded state of clamp C as shown in FIG. 7. Downward thrust of said wedge 34 in the direction of the vertical arrow in FIG. 4 will, however, cam the clamp C into the contracted state in a manner which will be well understood whereby, for example, to move the hook 18 in the direction of the horizontal arrow in this view and so to draw together the adjacent wall sections W-W as above indicated; said clamp C remaining so contracted as will be understood so long as wedge 34 is in place. Thereafter, removal of wedge 34 permits reexpansion of clamp C and its disengagement from abutment 34, said clamp C being then swingable on pivot 28 into its inoperative, concealed storage position in the interior of its associated wall section W.

The wedge 34 may, of course, be chained to a convenient part of said wall section W as shown in FIG. 4 to prevent its loss.

The combination of wall section W with clamp C as herein visualized in which the clamp is stored in the interior of the wall section frame has been productive of many significant advantages. Not only has it militated against the loss of clamps C and of its parts thereof, but their concealment in the wall section has also reduced their vulnerability to damage in transit or storage. Most significantly, the invention has proven to be particularly advantageous from the viewpoint of economies in the time and effort required to assemble the present wall sections to provide concrete forms.

Apart from the foregoing, the present wall section W is capable of being stored, transported, set up and taken down with no inconvenience at all resulting from the presence of the clamp C; this being one of the benefits derived from the use of the storage capacity of the wall section for the purposes of the invention.

On consideration of the foregoing submission, it will be apparent that the present inventive concepts as taught herein and expressed in the claims following are capable of embodiment in forms other than that herein specifically described.

We claim:

1. A modular wall section assemblable with other similar wall sections to provide a form for a concrete wall or the like comprising:

a deep frame;

a panel peripherally codimensional and congruent with said frame, coincidentally mounted on one surface thereof;

a clamp pivotally mounted on said wall section to swing between an inoperative stored position in the interior of the frame and an operative position on the exterior thereof; and

said clamp being expandable to engage an abutment carried by a closely spaced adjacent wall section and being contractible thereafter to procure abutting, coplanar, side edge to side edge relation of both said sections.

2. The modular wall section of claim 1 wherein said clamp includes two parts slidable relative to each other to effect expansion and contraction thereof; said clamp being pivotally mounted as aforesaid by one of said parts and the other said part having means engageable with the abutment aforesaid.

3. The structure of claim 1 wherein said clamp is pivotally located and mounted adjacent one side edge of the section and an abutment is provided adjacent the other side edge of the frame for engagement by a clamp correspondingly located and mounted on an adjacent wall section.

4. The modular wall section of claim 2 wherein the two parts of the clamp are constituted by a sheath and a mating element slidable therein.

5. The modular wall section of claim 4 wherein the sheath is the part pivotally mounting said clamp and the slidable element is reciprocally captive in said sheath and carries a hook for engaging the abutment aforesaid.

6. The modular wall section of any of claims 1 to 5 inclusive including mutually confronting parallel flanges mounted in the interior of said frame; said clamp being pivotally mounted and dimensioned to pass between said flanges in swinging between its operative and inoperative positions.

7. The modular wall section of any of claims 1 to 5 inclusive including webs secured to a surface of the frame in substantially coplanar relation therewith; a pair of flanges integral with said webs supported in spaced mutually confronting relation in the interior of said frames; said clamp being pivotally mounted and dimensioned to pass between said flanges in swinging between its operative and inoperative positions.