Oct. 28, 1930. N. GRAZIANO 1,779,908

WALL MOLD

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Fig. 1.

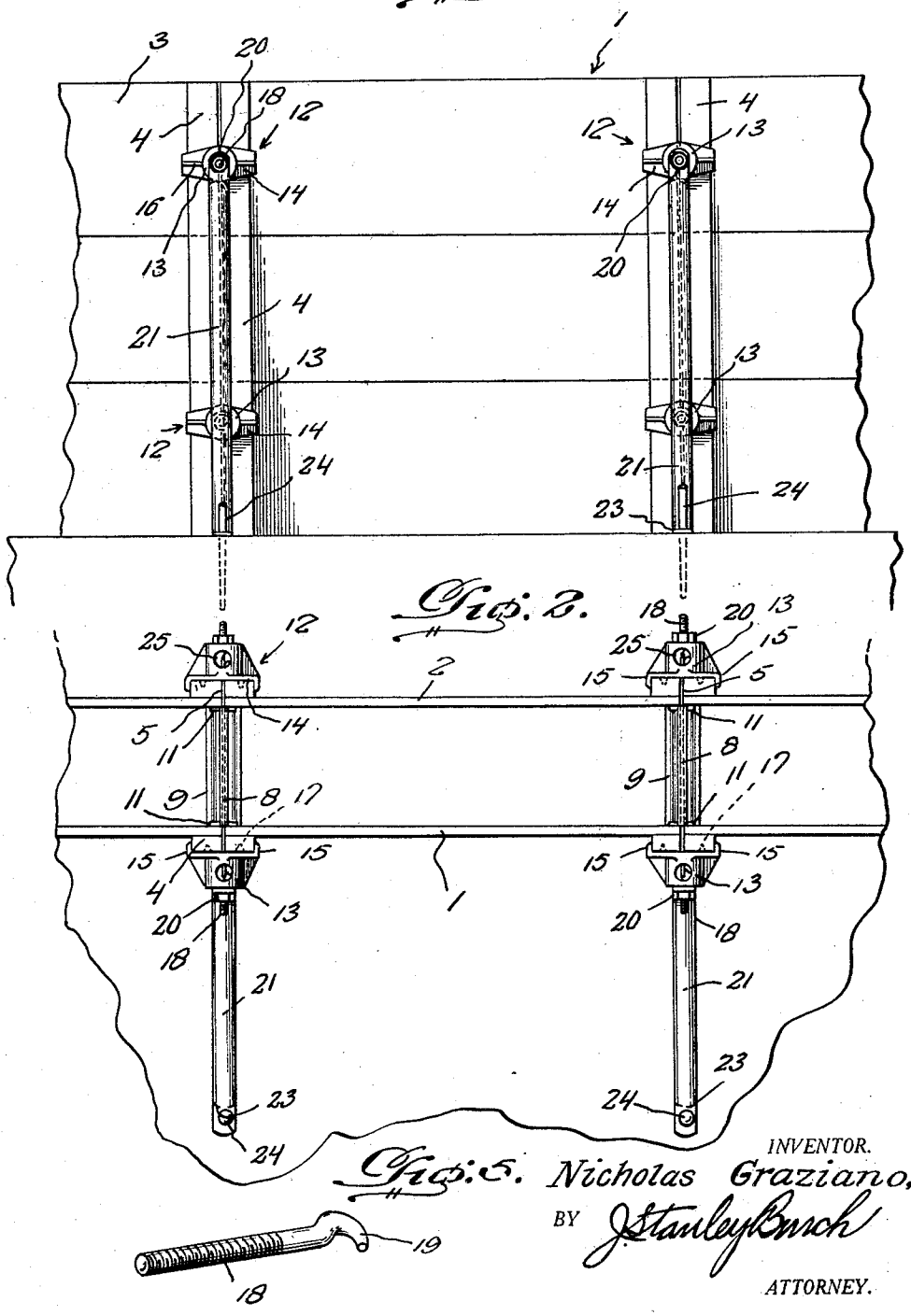


Fig. 2.

Fig. 5.

INVENTOR.
Nicholas Graziano,
BY J. Stanley Bunch
ATTORNEY.

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Fig. 4.

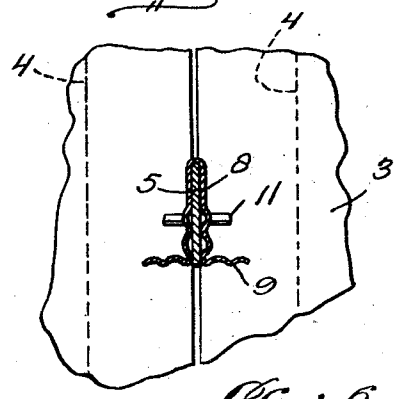


Fig. 3.

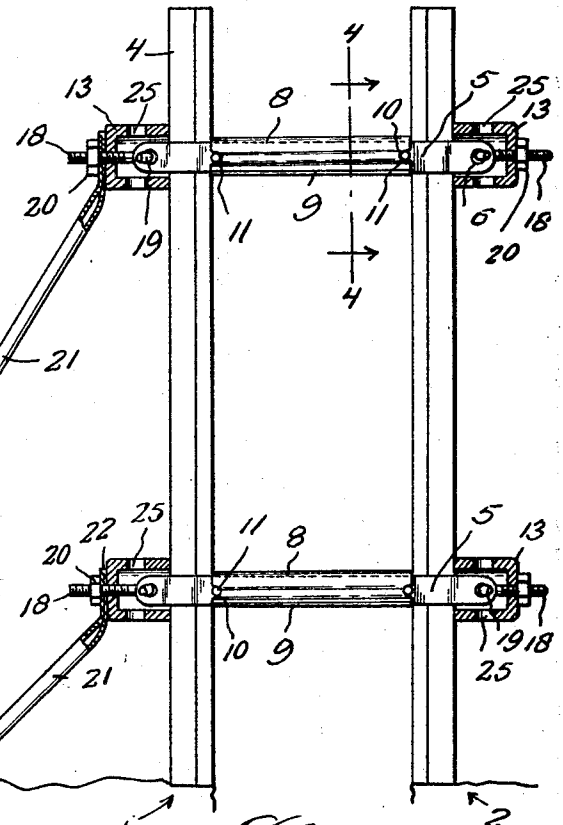


Fig. 6.

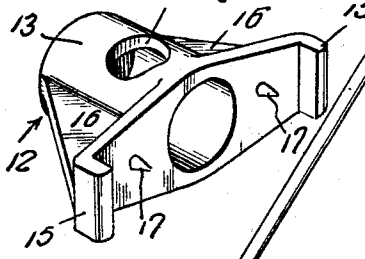


Fig. 9.

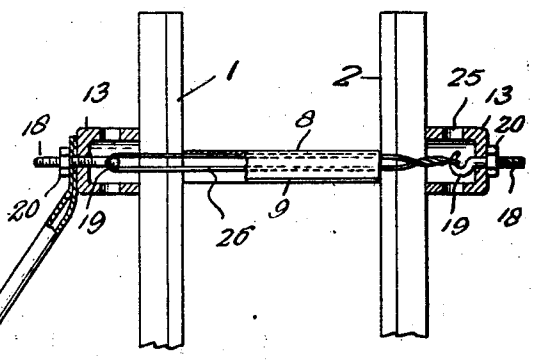


Fig. 7.

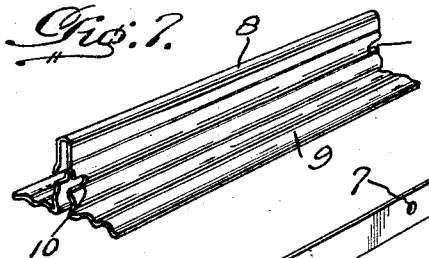
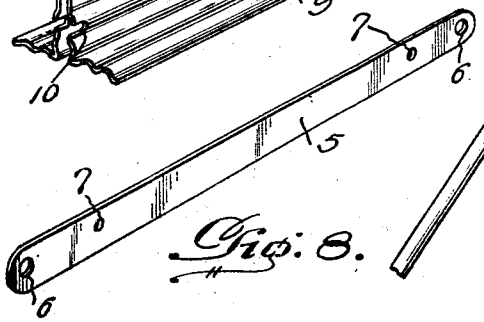


Fig. 8.



INVENTOR.

Nicholas Graziano

BY J. Stanley Bunch

ATTORNEY.

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UNITED STATES PATENT OFFICE

NICHOLAS GRAZIANO, OF LONG ISLAND CITY, NEW YORK

WALL MOLD

Application filed June 7, 1929. Serial No. 369,147.

The present invention relates to improvements in concrete molds or forms for walls, ceilings and the like, and has more particular reference to an adjustable form tie and spacer.

One of the important objects of the present invention is to provide improved means for maintaining the walls of a form in proper spaced relation, wherein spacers are interposed between the form walls, wherein supporting elements for the spacers are disposed transversely of the form, and wherein the outer ends of the supporting elements project outwardly beyond the outer faces of the form walls for connection with adjusting and clamping means exteriorly of the wall mold or form.

A further and important object is to provide a form tie and spacer wherein clamping members are provided for engagement with the adjacent ends of the sections of the form walls on the outside of the latter, and wherein means including a hook-shaped adjusting bolt is associated with each clamping member for engagement with the adjacent end of the spacer supporting or tie element, whereby the form walls may be drawn toward each other into proper position.

Another important object is to provide a form tie of the above-mentioned character wherein the spacer supporting or tie element connects with the adjusting bolts outside the form, and wherein the projecting ends of said element are adapted to be readily broken off after the walls of the form have been removed.

A still further object is to provide a form tie of the above-mentioned character wherein means is employed for association with each of the spacer supporting or tie elements and the inner faces of the respective form walls for limiting the movement of the latter toward each other.

Another object is to provide a form tie and spacer of the above-mentioned character wherein the parts are so constructed and arranged as to readily permit the adjustments exteriorly of the forms, the parts being further readily and easily assembled or disassembled.

Another object is to provide a form tie and spacer of the above-mentioned character which is simple in construction, inexpensive, strong and durable and further well adapted for the purposes for which it is designed.

Other objects and advantages of the invention will become apparent from the following description when taken in connection with the accompanying drawings.

In the accompanying drawings wherein like reference characters indicate corresponding parts throughout the same;

Figure 1 is a side elevation of a wall mold or form provided with ties and spacers embodying my invention.

Figure 2 is a top plan view thereof.

Figure 3 is a view, partly in end elevation, and partly in vertical section, of the construction shown in Figures 1 and 2.

Figure 4 is a vertical sectional view taken approximately on the line 4—4 of Figure 3 and looking in the direction of the arrows.

Figure 5 is a detail perspective view of one of the hook-shaped adjusting bolts.

Figure 6 is a similar view of one of the clamping members.

Figure 7 is a detail perspective view of the spacer forming a salient part of the present invention.

Figure 8 is a similar view of one of the tie elements or blades that support the spacer; and

Figure 9 is a fragmentary view similar to Figure 3 embodying a modification of the tie element or spacer supporting means.

In the drawings, wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numerals 1 and 2 designate generally the vertically disposed parallel spaced walls of a mold or form between which the plastic material is poured in order to form a concrete wall. Each form wall includes a series of boards or metal sections 3 that are disposed in edge to edge relation, and flanges 4 are formed on the outer face of each section or board at the respective ends thereof. As many of these wall sections or boards may be employed as is necessary, depending upon the height and length of the wall that is to be constructed.

A series of tie elements, consisting of metallic blades such as shown at 5 in Figure 8, are disposed transversely of the form, the ends of the blades being disposed between the adjacent edges of abutting pairs of form boards or sections, and the outer extremities of the tie elements or blades projecting beyond the outer faces of said forms. An opening 6 is formed in each end portion of each blade 5, and also formed in the ends of each blade inwardly of the openings 6 are the pin receiving holes 7, the purpose of which will be presently described.

A channel-shaped spacer member 8, that is preferably formed of corrugated metal, is removably fitted over and rests upon the upper edge of the intermediate portion of each tie element or blade 5, and each spacer is provided with laterally disposed flanges 9. The ends of each spacer are notched as indicated at 10 (see Figure 7) and the length of the spacer members depends upon the thickness of the concrete wall that is to be molded. The ends of the spacer members are adapted to abut against the inner faces of the form walls 1 and 2 as clearly shown in Figure 3.

A pin 11 is disposed through each pin hole 7 formed in each of the blades 5 and the projecting ends of the pins extend through the notches 10 formed in the ends of the respective channel-shaped spacers 8. These pins also engage with the inner faces of the form walls for the purpose of preventing the form walls from being taken up too much on one side, and the take up or adjusting means associated with each end of each blade will be presently described in detail.

Forming a salient part of the present invention are the clamping members shown generally at 12 in Figure 6. Each clamping member includes a body 13 that is hollow and has a centrally apertured outer end wall. A plate-like portion 14 is formed on the open inner end of the hollow body 13, said plate-like portion tapering gradually from its central portion toward its respective ends and inwardly directed lugs 15 being formed on the extremities thereof. Reinforcing webs 16 connect the outer faces of the hollow body and the ends of the plate-like portion as also suggested very clearly in Figure 6.

Each clamping member is disposed across the outer edges of the abutting flanges 4 with the lugs 15 engaging with the side faces of the flanges, and in order to secure the clamping member 12 from displacement spurs 17 are provided on the inner face of the plate-like portion 14, said spurs being adapted to bite into the outer faces of the abutting flange portions 4 when wooden form sections are used. The clamping members are preferably located so as to receive the projecting ends of the blades 5 and the projecting ends of the blades loosely extend into the hollow body portions of the respective clamping members as clearly shown in Figure 3.

A threaded shank 18 is loosely disposed through central aperture provided in the outer end of each hollow body 13, and formed on the inner end of each shank is a hook member 19, said hook member being slightly offset. It will be noted upon referring to Figure 5 that the hook tapers gradually toward its point and is adapted to have pivotal engagement in the opening 6 formed in the adjacent end of the blade 5. Due to the swinging movement allowed the blade 5 relative to the clamping members, the clamping member at one side of the form may be placed higher than that at the opposite side, when found necessary or desirable. A nut 20 is threaded on the projecting end of each shank 18 for engagement with the outer end of the adjacent clamp body, and by turning the nuts in one direction the clamps can be drawn inwardly so as to adjust the walls of the form toward each other and bring them into engagement with the pins 11 and the ends of the channel-shaped spacers 8. If desired, the pins 11 may be used and the spacers 8 eliminated.

Suitable braces 21 may be provided in association with the mold, and in Figure 3 there is clearly disclosed the manner in which these braces are connected with the mold. The braces are disposed at an inclination and the upper ends thereof are angularly directed and formed with openings to accommodate the threaded shanks, said angularly directed ends 22 of the braces being disposed against the outer ends of the bodies of the respective clamping members on one side of the mold, and the adjacent nuts 20 holding the upper ends of the braces in position. The lower ends of these inclined braces are also angularly directed as indicated at 23 and are formed with openings to accommodate the stakes 24 that are driven into the ground.

When the parts are arranged as shown in Figure 3, the form is assembled so that concrete may be poured between the walls thereof, and after the plastic material has set, the form walls are removed along with the clamps. It might be well at this time to state that in order to ascertain whether or not the hook members are properly engaged with the apertured ends of the blades, each hollow body is formed with sight openings 25. In order to prevent the adjusting bolts from turning and breaking loose from the associated blade 5, a tool may be inserted in the openings 25, when found necessary.

After the walls of the form have been removed, the projecting ends of the blades may be twisted off or otherwise separated from the intermediate portions of the blade that remains within the concrete along with the corrugated spacers 8. The pins 11 may then also be removed.

In Figure 9 of the drawings, I have shown a modification of the spacer supporting means wherein the same constitutes a looped wire member 26 that functions in the same manner as the metallic blades 5, the hooks being disposed through the looped ends of said wire member. When a nut is moved to the innermost threaded portion of the shank, a further rotation of the nut will cause turning of said shank so that the adjacent end portion of the looped wire will be twisted as shown in Figure 9 to insure bringing of the walls of the form tightly against the ends of the adjacent spacer 8.

A form tie of this character can be readily and easily assembled or disassembled and by arrangement of the parts in the manner as proposed, access thereto may be had from the outside of the form so that the necessary adjustments can be made without difficulty. Furthermore a device of this character will at all times be strong, durable, positive and efficient in carrying out the purposes for which it is designed.

While I have shown the preferred embodiment of my invention, it is to be understood that minor changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the appended claims.

What is claimed is:

1. In a concrete wall form, means for clamping the adjacent edge portions of the sections of each form wall together, spacing members adapted to be arranged transversely between the form walls, supporting elements for the spacing members adapted to have their ends extend between the adjacent edge portions of the sections of the form walls and to project beyond the outer faces of the latter, and coacting means between the clamping members and the aforementioned supporting elements for moving the sections of the form walls inwardly against the respective ends of the spacing members.

2. In a concrete wall form, means for clamping the adjacent edge portions of the sections of each form wall together, spacing members adapted to be arranged transversely between the form walls, supporting elements for the spacing members adapted to have their ends extend between the adjacent edge portions of the sections of the form walls and to project beyond the outer faces of said form walls, coacting means between the clamping members and the aforementioned supporting elements for moving the sections of the form walls inwardly against the respective ends of the spacing members, and stop forming pins carried by the supporting elements for engagement with the inner faces of the form walls and the adjacent ends of the spacing members.

3. In a concrete wall form, means for clamping the adjacent edge portions of the sections of each form wall together, spacing members adapted to be arranged transversely between the form walls, supporting elements for the spacing members adapted to have their ends extend between the adjacent edge portions of the sections of the form walls and to project beyond the outer faces of said form walls, and coacting means between the clamping members and the aforementioned supporting elements for moving the sections of the form walls inwardly against the respective ends of the spacing members, each clamping member including a hollow body for receiving the adjacent projecting end of the adjacent supporting element, each last named means including a shank disposed through the outer end of the hollow body of the associated clamping member, a hook formed on the inner end of said shank for engagement with the adjacent end of the supporting element, the outer end of the shank being threaded, and an adjusting nut threaded on said shank and adapted for engagement with the outer end of said hollow body.

4. In a concrete form, a pair of vertical sectional side form walls, spacing members interposed therebetween, supporting elements for the spacing members, the ends of the supporting elements projecting outwardly beyond the outer faces of the respective form walls, means arranged exteriorly of the form for engagement with the projecting ends of the supporting elements to draw the form walls together, each spacing member comprising a channel-shaped structure having laterally extending flanges formed on the free edges thereof, the ends of the channel-shaped member being notched, and stop forming pins carried by the supporting elements for engagement within the notches and against the inner faces of the form walls for limiting the movement of the form walls toward each other.

5. In a concrete wall form, a pair of sectional vertically arranged form walls, means for clamping the adjacent edge portions of the sections of each form wall together, spacing members arranged transversely between the form walls, supporting elements for the spacing members having their ends extending between the adjacent edge portions of the sections of the form walls and projecting beyond the outer faces of said form walls, and coacting means between the clamping members and the aforementioned supporting elements for moving the form walls inwardly against the respective ends of the spacing members, each clamping member including a hollow body for receiving the adjacent projecting end of the adjacent supporting element, each last mentioned means including a shank disposed through the outer end of the adjacent hollow body, a hook formed on the inner end of said shank for engagement

with the adjacent end of the adjacent supporting element, the outer end of the shank being threaded, and an adjusting nut threaded on said shank and adapted for engagement with the outer end of said cylindrical body, and means associated with each clamping member for preventing movement of the same with respect to the sections of the form walls parallel with the plane of the latter.

In testimony whereof I affix my signature.

NICHOLAS GRAZIANO.