Nov. 22, 1966 F. R. LANGFORD 3,286,975

CLAMP FOR CONCRETE FORMS

Filed July 20, 1964 2 Sheets-Sheet 1

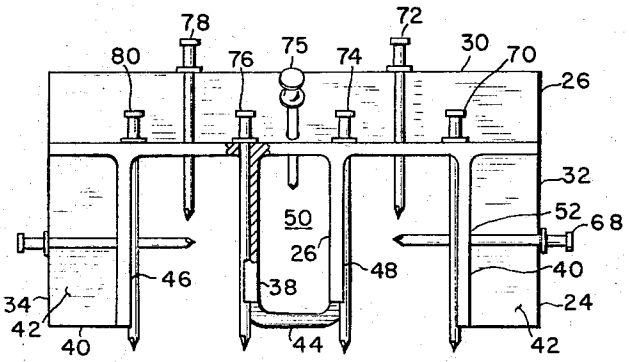


FIG. 1

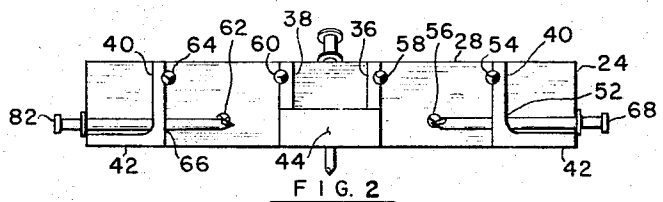


FIG. 2

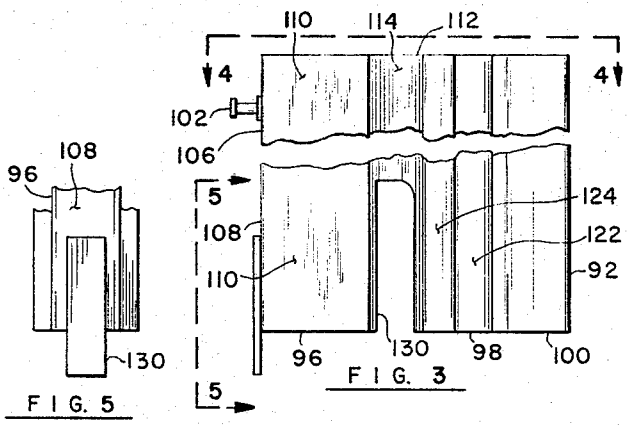


FIG. 5

FIG. 3

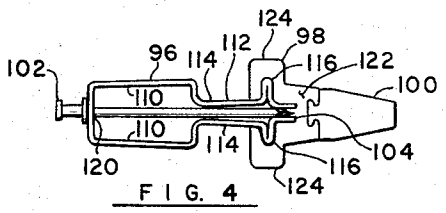


FIG. 4

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Filed July 20, 1964 2 Sheets-Sheet 2

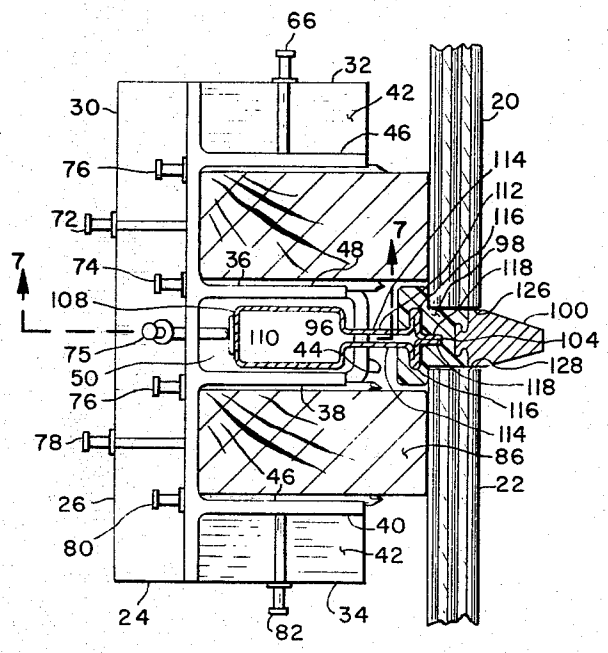


FIG. 6

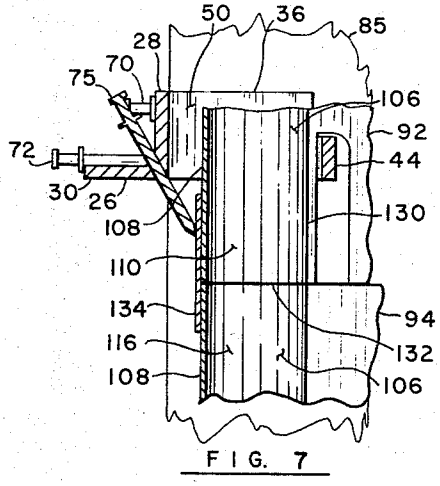


FIG. 7

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CLAMP FOR CONCRETE FORMS

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5 Claims. (Cl. 249—192)

The present invention relates to a forming system comprising a plurality of adjacent panels whose edges are contiguous. The panels are interconnected by a device which permits the adjustment of the relative position of adjacent panels. This adjusting device provides for the forming of a surface which is even and which is free from misaligned surface treatments such as grooves produced by inserts between panels. In other respects the forming system is similar to conventional panel forming of concrete.

The invention utilizes sealing means between the panels to prohibit the egress of the formed substance. This feature is very beneficial in the case where the formed substance is concrete. When water leaks from formed concrete, the hardened concrete, in the vicinity of a leak, has a rough uncemented sandy finish. Since the sealing means prohibits leakage, a concrete surface formed with the system of the present invention is without such uncemented sandy finish defects.

Other features and the advantages of the present invention will be apparent from the following description, reference being made to the accompanying drawings wherein a preferred embodiment of the invention is illustrated.

In the drawings:

FIG. 1 is a plan view of the form clamp;

FIG. 2 is a front view of the form clamp;

FIG. 3 is a side view of the sealing means;

FIG. 4 is a plan view of the sealing means taken along line 4—4 of FIG. 3, the elastic element being shown expanded;

FIG. 5 is a fragmentary back view of the sealing means taken along line 5—5 of FIG. 3;

FIG. 6 is a cross-sectional view of the forming panels and of the sealing means with the elastic element uncompressed, the form clamp being shown beyond; and

FIG. 7 is a cross-sectional view of the form clamp and sealing means taken along line 7—7 of FIG. 6.

Referring in detail to the drawings, FIG. 7 illustrates the forming system, the principal elements of which are the panels **20** and **22**, the form clamp **24** and the sealing member **92** or **94**.

The clamp **24** includes an angle **26** with one leg **28** extending vertically and one leg **30** extending rearwardly, angles **32** and **34**, one of which is located at each end of angle **26**, and which extend forwardly of angle **26** and at right angles to leg **28**, and upright sections **36** and **38** which extend forwardly of angle **26** and at right angles to leg **28**. Angles **32** and **34** have upright legs **40** and outwardly facing legs **42**. The ends of legs **42** are each flush with an end of angle **26**. Upright sections **36** and **38** are in proximity to center of angle **26** and are joined at their forward ends by upright section **44**. The upright legs **40** and the upright sections **36** and **38** are equally spaced along leg **28**. This spacing produces two channels **46** and **48** with the open ends on the forward side of clamp **24**, and a hole **50** defined by members **28**, **36**, **38** and **44**.

Holes **52**. **54**, **56**, **58**, **59**, **60**, **62**, **64** and **66** are provided to receive nails **68**, **70**, **72**, **74**, **75**, **76**, **78**, **80** and **82**, respectively. Holes **52** and **66** are in legs **40** and are located adjacent legs **42**. Holes **56** and **62** are in leg **28** and are located adjacent leg **30** and proximately in the center of channels **46** and **48**, respectively. Holes **54**, **58**

are so located that their forward projection forms forward extending channels **84** in legs **40** and sections **36** and **38**, as shown in the sectional portion of FIG. 1. Channels **84** are in the forward extending sides of channels **46** and **48**. Hole **59** extends downwardly and forwardly through leg **30**.

Panels **20** and **22** include upward extending edge flanges **85** and **86**, respectively, and vertical forming panels **88**. The flanges are affixed to the forming panels.

The vertical extending sealing members **92** and **94** each includes a main body **96**, an elastic seal **98**, a forward extending tongue **100** and separator nails **102**. The sealing members being symmetric in cross section with respect to its forward and rearwardly extending axes.

The main body **96** is made of one piece of metal which forms a channel shape which closes on itself at the forward extending end **104**. The main body **96** is uniform in shape with respect to its vertical length, has a constant depth, but has four different widths. The rear portion **106** of the main body **96** has a width substantially equal to and a depth less than that of hole **50** of form clamp **24**. The back wall **108** of the rear portion **106** confronts leg **28** of form clamp **24** where the rear portion **106** passes through said clamp. The side walls **110** of the rear portion **106**, confront upright sections **36** and **38** of the form clamp **24** where the rear portion **106** passes through said clamp.

A spacer portion **112** of the main body **96**, which has parallel walls **114** whose interior sides are spaced by a distance substantially equal to the width of a separator nail **102**, lies adjacent and forwardly of rear portion **106**.

Fins **116**, extend laterally adjacent and forwardly of spacer portion **112**, one extending from each side.

Forward extending and confronting separator walls **118**, which abut one another and form the open end **104** of the main body **96**, lie adjacent and forwardly of the fins **116**.

The rear wall **108** of the main body **96** has holes **120** for the insertion of separator nails **102**. The separator nails **102** (see FIG. 4) are inserted in holes **120**, extended through the rear wall **108**, and the spacer portion **112**, and are forced between separator walls **118**. The forcing of the separator nails **102** between separator walls **118** causes the walls to move laterally. The shank length of the separator nails **102** having a length substantially equal to the depth of the main body **96**.

The elastic seal **98** has a T-shaped cross section with a forward extending leg **122** and laterally extending arms **124**, each arm encompassing one of the laterally extending fins **116**. The forward extending leg **122** encompasses the separator walls **118** and has a width that is substantially equal to the space between the panels **20** and **22**. When the separator walls **118** are moved laterally, the forward extending leg **122** is stretched laterally.

The tongue **100** lies forwardly of leg **122** and protrudes into the formed substance. The shape of this tongue may be chosen to give the desired surface design.

The lower portion of the spacer portion **112** of the main body of each of the sealing members was removed to provide a slot **130** for the upright portion **44** of clamp **24**, to allow the lower end of the upper sealing member **92** to pass through the clamp **24**.

The forming system is erected in the following manner: One of the panels **20**, for example panel **20** is already in place, and the remaining panel **22** is placed contiguous to panel **20**. The channels **46** and **48** of the form clamp **24** are placed, respectively, over the flanges **85** and **86** which respectively protrude from the non-forming surfaces of panels **20** and **22**. Each of the channels **46** and **48** is wider than either of the wood flanges **85** and **86**. Holding nail **72** is then driven through hole

56 so as to seat the back side of channel 46 against the back side of flange 85. Holding nail 68 is then driven through hole 52 to prevent nail 72 from pulling out. Wedging nails 70 and 74 are then driven through holes 54 and 58, respectively. The wedging nails 70 and 74 are guided by grooves, one of which is shown at 84. The depth of the grooves is less than the diameter of the wedging nails. The wedging nails in combination with channel 46, fit snugly against the sides of flange 85. At this point in the erection sequence the form clamp 24 is firmly affixed to panel 20.

The next step in the erection sequence is to position panel 22 such that edges 126 and 128 of panels are parallel and are spaced such that the leg 122 fits snugly in the space between edges 126 and 128. Only a small adjustment is necessary to accomplish this result since the channels 46 and 48 and the flanges 85 and 86 are constructed so that the panels 20 and 22, in combination with the form clamp 24, are substantially aligned before the nails are driven through the form clamp. After panel 22 is properly positioned, holding nail 78 is driven in hole 62, then wedging nails 76 and 80 are driven in holes 60 and 64, respectively. Holding nail 82 is driven in hole 66 to prevent the flange 86 from being pulled out of channel 48. At this point the panels 20 and 22 are firmly held together and positioned by the form clamp and its associated nails.

As previously mentioned holes 52 and 66, and 56 and 62 are adjacent surfaces 42 and 30, respectively. Therefore nails 68, 72, 78 or 82 can only be driven until their heads abut the outer edges of said surfaces. This feature permits the easy removal of the nails.

If panels 20 and 22 are made of the same size material, the outer corner of edges 60 and 62 will be parallel.

With the panels 20 and 22 in position, sealing member 94 is placed so that leg 122 fits between confronting edges 126 and 128 of adjacent panels. The top end of sealing member 94 is placed just below the bottom of the form clamp 24. Sealing member 92 is then placed by inserting the main body 96 through hole 50 of form clamp 24. The bottom end of the main body 96 abuts the upper end 132 of sealing member 94. Tab 134 is attached to the back surface 108 of tongue 130 and extends over the back surface 108 of member 94.

Nail 75 is then inserted in hole 59 and is driven in wedging relationship with tab 134. This wedging action forces the elastic leg 122 of elastic seal 98, into the space between edges 126 and 128, and forces the arm 124 of said seal against the back sides of panels 20 and 22 so as to effectuate a seal between said arms and sides.

The separator nails 102 are then driven so as to laterally expand leg 122 of seal 98, thus effectuating a seal between edges 126 and 128. As many separator nails as required to effectuate the seal would be driven.

While the form of embodiment herein shown and described constitutes a preferred form, it is understood that other forms may be adopted falling within the scope of the claims that follow.

I claim:

1. A forming system comprising in combination:
(A) A plurality of panels whose edges are substantially contiguous and which in combination form a continuous forming surface;
(1) said panels each have at least one flange protruding from the non-forming surface, said flange being adjacent a panel edge;
(B) means cooperating with adjacent flanges of adjacent panels for holding the panels in contiguous relation;

(C) a sealing member disposed between confronting edges of the panels;
(D) and wedging means for spreading the sealing mem ber into sealing relationship with the confronting edges of the panels.

2. A forming system comprising in combination:
(A) A plurality of panels whose edges are substantially contiguous and which in combination form a continuous forming surface;
(1) said panels each have at least one flange protruding from the non-forming surface, said flange being adjacent a panel edge;
(B) means cooperating with adjacent flanges of adjacent panels for holding the panels in contiguous relation and for adjusting the space between panel edges, said means comprised of:
(1) channels spaced so as to receive said flanges, the respective widths of said channels being greater than the respective flange widths;
(2) wedging means having a first portion between the channels and having a second portion extending between the edges of the panels;
(3) interconnecting means for spacing and interconnecting said channels;
(4) fastening means for fastening the channels to the flanges.

3. A forming system comprising in combination:
(A) A plurality of panels whose edges are substantially contiguous and which in combination form a continuous forming surface;
(1) said panels each have at least one flange protruding from the non-forming surface, said flange being adjacent a panel edge;
(B) means cooperating with adjacent flanges of adjacent panels for holding the panels in contiguous relation and for adjusting the space between panel edges;
(C) sealing means between and adjacent to at least one of the pairs of contiguous edges, said sealing means comprising;
(1) a continuous member located on the non-forming side of the panels and adjacent the space between the contiguous edges;
(2) a continuous elastic member attached to said continuous member and positioned in said space and adjacent the non-forming side of said panels;
(3) means for compressing said elastic member against the non-forming side of said panels;
(4) means for expanding the elastic member to substantially fill said space.

4. A forming system as defined in claim 1, characterized in that the sealing member is formed of elastic material.

5. A forming system as defined in claim 1, characterized in that the wedging means includes:
(1) confronting legs, movable away from one another;
(2) and a wedge movable between said confronting legs.

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