March 25, 1969 O. J. AFTRETH 3,434,689

PANEL-TYPE FORM SYSTEM WITH GASKET STRIPS

Filed March 13, 1968 Sheet 1 of 2

FIG. 1

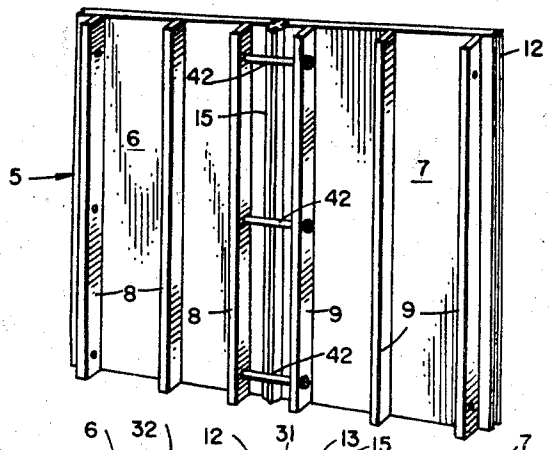


FIG. 2

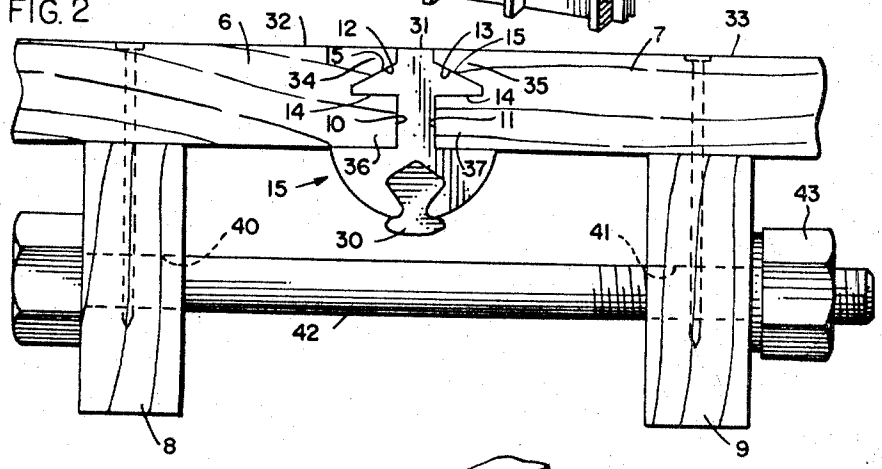
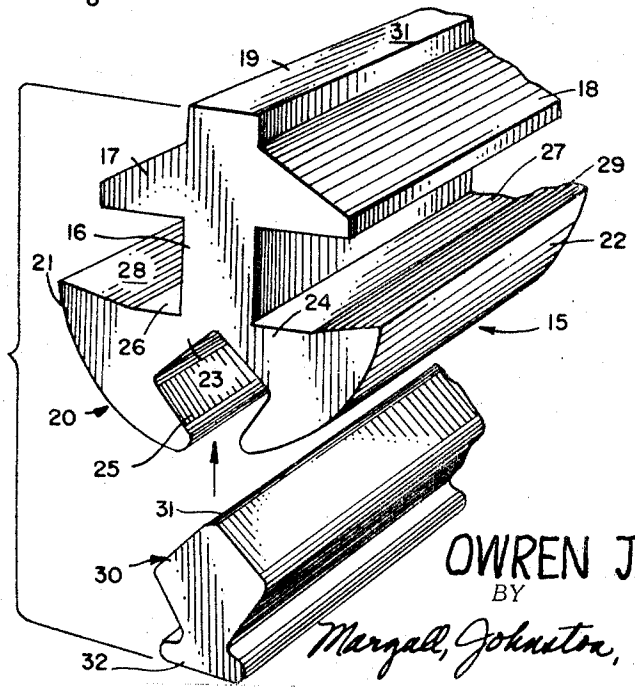


FIG. 3



INVENTOR:
OWREN J. AFTRETH
BY
Marzall, Johnston, Cook & Root
ATT'YS

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FIG. 4

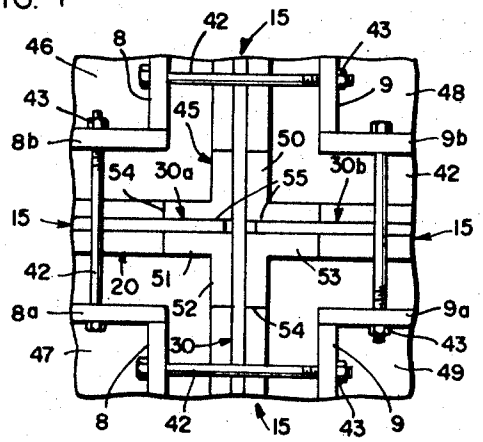


FIG. 5

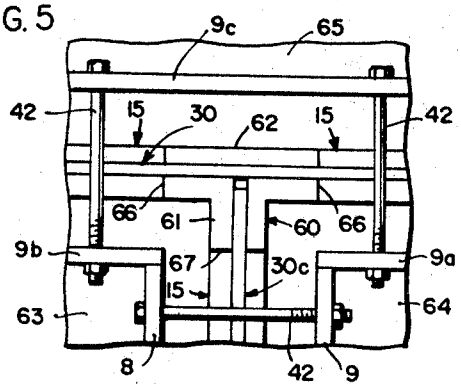


FIG. 6

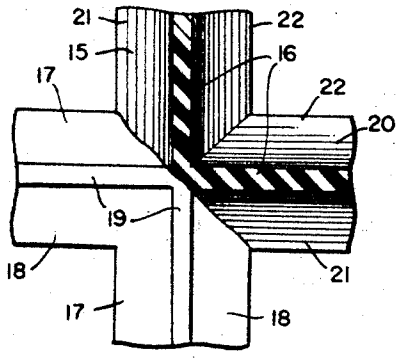
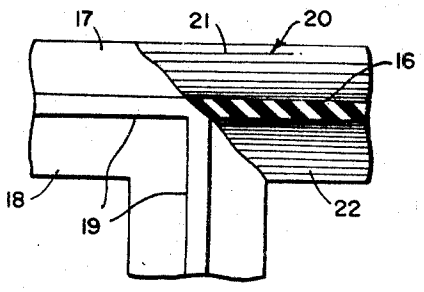


FIG. 7



INVENTOR:
OWREN J. AFTRETH
BY
Marzall, Johnston, Cook & Root
ATT'YS

United States Patent Office 3,434,689
Patented Mar. 25, 1969

3,434,689

PANEL-TYPE FORM SYSTEM WITH GASKET STRIPS

Owren J. Aftreth, Chappaqua, N.Y., assignor to The D. S. Brown Company, North Baltimore, Ohio, a corporation of Ohio

Filed Mar. 13, 1968, Ser. No. 712,792
Int. Cl. E04g 9/10; B29c 1/02
U.S. Cl. 249—193 4 Claims

ABSTRACT OF THE DISCLOSURE

Concrete forms system with aligned panels and elastomer filler strip gasket between opposing edges of panels providing substantially water-tight seal.

Briefly, this invention relates to form systems for pouring concrete walls and the like, which systems utilize a pair of opposing walls into which the concrete can be poured. These walls are made up of a series of substantially abutting, aligned panels having grooves in the side edges. The elongated gasket strips of the invention have elongated ribs which matingly fit into these grooves to provide an essentially water tight joint between contiguous edges of the substantially abutting panels. Furthermore, the elongated gasket strips are provided with faces substantially in the plane of the faces of the panels against which the concrete is retained, whereby the concrete wall, upon curing and removal of the forms, presents a finished surface essentially free from protruding ridges which detract from the appearance of the concrete wall.

The elastomer filler strips serve the purpose of provding a substantially water tight joint between panels. Concrete of good quality is made with predetermined proportions of water to give the best quality to the cured concrete. If substantial amounts of this water escape through leaks in the form wall, the quality of the cured concrete is degraded. The higher the concrete wall, column, etc., being poured, the greater is the weight of the concrete tending to press water out of the lower parts of the poured concrete. Hence, a wall or column of cured concrete could be of inferior or poorer quality in the lower portions thereof through loss of water prior to cure due to the pressure thereon by the concrete above.

An object of this invention is to provide a concrete forms system embodying a form wall with substantially aligned panels with spaces between opposing edges, each of which has a longitudinal, tapered groove, and said spaces being filled with a web of an elastomer filler strip with tapered ribs on said web seated in grooves of said opposing edges.

Another object is to provide a concrete forms system as aforesaid wherein an edge of said web is substantially flush with the concrete-retaining faces of said panels to provide a smooth-surfaced joint.

A further object is to provide concrete forms systems embodying substantially aligned panels forming a wall of the forms system with spaced, opposing edges between said panels filled by an elastomer filler strip, and means on the panels drawing the edges together to compress the filler strip therebetween.

Still another object is to provide concrete forms systems as aforesaid wherein said web of said filler strip has an elongated base strip extending along one edge thereof with oppositely and laterally-directed, elongated, elastomer flanges and a face on each flange pressing against a respective face of said panels contiguous to the edges thereof, whereby said filler strip urges said panels into substantial alignment.

Another object is to provide concrete forms systems

as aforesaid wherein said base strip has a longitudinal groove providing narrow, elastomer, elongated necks at the bases of the flanges for flexure of said flanges during mounting of the filler strips in the spaces between panels and a removable filler strip in the longitudinal groove, which, when inserted, urges the faces of the flanges against the respective faces of the panels.

Another object of the invention is to provide elastomer filler strips as aforedefined.

A further object is to provide an elongated gasket strip wherein said elongated groove is substantially diamond-shaped and said removable filler strip has an elongated, substantially diamond-shaped head which fits into and substantially fills said groove.

These, as well as other objects, features and advantages of the invention hereinafter made apparent to those skilled in the art, are provided by the preferred embodiment illustrated in the accompanying drawing, wherein:

FIGURE 1 is a rear, perspective view of two panels of a wall of a concrete forms system with a filler strip of the invention therebetween;

FIG. 2 is a top plan view of the segment of said wall in the vicinity of the filler strip;

FIG. 3 is a perspective, fragmentary, exploded view of the filler strip;

FIG. 4 is a fragmentary, side elevation of the contiguous corners of four form panels, the filler strips therebetween, and a cross filler piece at the cross intersection of said panels;

FIG. 5 is a fragmentary, side elevation of the contiguous corners of two form panels, a third panel laid lengthwise across the upper edges thereof, the filler strips therebetween and a T-filler piece at the T-intersection of said panels; and

FIGS. 6 and 7, respectively, are side elevations, with portions broken away, of the cross filler piece and T-filler piece of FIGS. 4 and 5.

Referring to the drawing, the illustrated segment of the form wall **5** comprises aligned, plywood panels **6** and **7** reinforced on the rear faces by vertical wood studs **8** and **9**, respectively, which are nailed thereto.

The opposing edges **10** and **11** of the panels have tapered grooves **12** and **13**, each having a rear wall **14** at right angles to the plane of the respective edge and a front wall **15** at an acute angle thereto.

An elongated, elastomer filler strip **15** fills the space between the panels. It comprises a rectangular, central web **16** having tapered ribs **17** and **18** extending laterally from opposite sides of the web near the front edge. The web has a front web portion **19** projecting beyond the ribs **17** and **18**.

The ribs are matingly shaped with the tapered grooves **12** and **13**, and they align the panels and filler strip as they are forced into the grooves when the opposing edges **10** and **11** of panels **6** and **7** are drawn together. The rear edge of web **16** has an elastomer, elongated base strip **20** with oppositely and laterally directed, elongated flanges **21** and **22** connected at their bases by narrow, elastomer, elongated, flexible necks **23** and **24**, respectively. The necks **23** and **24** are formed by providing, the opposite rear edge of web **16**, an elongated, substantially diamond-shaped groove **25** in the base strip **20**. The front faces **26** and **27** of ribs **21** and **22** have longitudinal edge portions **28** and **29** which slope slightly forwardly.

The form wall is formed by aligning panels **6** and **7**, and bringing them together with ribs **17** and **18** of the filler strip in groves **12** and **13** which are formed between the front tongues **34** and **35** and rear tongues **36** and **37** of the panel edges. The removable filler strip **30** for groove **25** is left out at this stage. The flanges **21** and **22** are flexed rearwardly at flexible necks **23** and **24** to slip panel tongues

36 and 37 between the rear edges of ribs 12 and 13 and the front faces 26 and 27 of flanges 21 and 22. As the panels are drawn together, the front web portion 19 is pressed on opposite sides by the opposing edges of tongues 34 and 35. Web 16 may be similarly pressed by the opposing edges of tongues 36 and 37. The front edge 31 aligns with the front, concrete-retaining faces 32 and 33 of panels 6 and 7 to provide a smooth face at the joint between panels.

The edges of the panels may be drawn together by any convenient means. The illustrated means includes a series of bolts 42 extending through pairs of aligned holes 40 and 41 in those studs 8 and 9, respectively, which are adjacent edges 10 and 11. The nuts 43 are tightened until the panels are drawn together enough to seat ribs 17 and 18 snugly in grooves 12 and 13 and press the tongues 34 and 35 tightly against the sides of web portion 19. As aforesaid, tongues 36 and 37 may also press tightly against the sides of web 16. As the ribs 17 and 18 work into the grooves 12 and 13, the panels become substantially aligned.

The removable filler strip 30 has a diamond-shaped head substantially mated to diamond-shaped groove 25 and a rear strip portion 32, the latter for gripping strip 30 to remove it from groove 25. Strip 30 is an elastomer strip which is preferably harder than the elastomer filler strip 15 so that it urges flanges 21 and 22 apart when inserted in groove 25. When so inserted, flanges 21 and 22 are urged in a pivotal-like action at flexible necks 23 and 24 to press faces 26 and 27 against the rear faces of panels 6 and 7. The sloping edges 28 and 29 are deformed and become substantially parallel with the inner portions of faces 26 and 27, whereby edge portions 28 and 29 are pressed tightly against the rear faces of the panels. The pressures of the edge portions against the rear faces aid in final alignment of the panels and also give a substantially water-tight joint.

The filler strip 15 may form substantially water-tight seals at several places. The first or primary seal is between the edges of tongues 34 and 35 and the sides of web portion 19. Secondary seals may also be effected, depending on relative dimensions and panel alignment, between the edges of tongues 36 and 37 and the sides of web 16 and between edge portions 28 and 29 and the rear faces of panels 6 and 7.

In addition to the side-by-side arrangement of form panels as illustrated in FIGS. 1 and 2, form systems of the invention may include arrangements wherein the abutting edges of the panels intersect in the form of a cross or of a T, as illustrated in FIGS. 4 and 5. In such case, the filler strips between contiguous edges of the panels may include pre-molded cross filler pieces at the cross intersections of the panels or premolded T-pieces at the T-intersections of the panels.

Referring to FIG. 4, a cross filler piece 45 of the same general transverse cross-section as filler strip 15 is mounted in the grooves 12 and 13 at the corners of panels 45, 47, 48, and 49. The legs 50, 51, 52 and 53 of the cross filler piece 45 each have a web 16, ribs 17 and 18, a front web 19, and flanges 21 and 22 which meet in the center portion of the cross filler piece at substantially right angle corners. Thus, the respective corners of panels 46, 47, 48, and 49 fit into a right angle corner formed by the respective intersections of pairs of the webs 16 of the cross filler piece 45.

The filler strip 30 may extend through the cross filler piece 45 in one direction, while the filler piece extending in the other direction comprises separate filler piece strips 30*a* and 30*b* having ends positioned in the cross filler piece 45 near filler strip 30.

The cross filler piece 45 may be used as a separate piece in assembling the form system, in which case the outer ends 54 of the respective legs are substantially abutted by the ends of respective filler strips 15 If desired, however, the cross filler pieces 45 may be vulcanized or otherwise adhered to the ends of the respective filler strips 15 to provide an integral network.

In panel systems arranged such as illustrated in FIG. 4, the stud reinforcement on the rear faces of panels 46, 47', 48, and 49 comprises vertically extending, wood studs 8 and 9 and horizontally extending wood studs 8*a*, 8*b*, 9*a*, and 9*b*. The ends of the respective studs terminate just short of the outer edges of the panels in the corner portions thereof. The four corners of the panels are drawn together by the use of four bolts 42 in the same manner as previously described to effect a substantially water-tight seal at the cross filler piece 45.

Referring to FIG. 5, a T-filler piece 60 having a leg 61 and a cross leg 62 is provided at the T-intersection of horizontally aligned form panels 63 and 64 and a vertically aligned panel 65 having its edge extending across the upper edge of panels 63 and 64. The legs 61 and 62 have a transverse cross-section corresponding to the transverse cross-section of filler strip 15 as illustrated in FIGS. 2 and 3 and are of like nature to the previously described legs 50–53 of the filler piece 45. The upper half of cross leg 62 corresponds in shape and dimension to the upper portion of the abutting filler strips 15. The lower half of the cross legs 62 has its web 16, flanges 17 and 18, front web portion 19, and base strip 20 with its flanges 21 and 22 intersecting the corresponding parts of the leg 61 at substantially right angles, whereby the square corners of panels 63 and 64 respectively fit into the corners formed by the intersections of the webs 16 corresponding to web 16 of FIG. 3.

The outer ends 66 of the cross legs 62 substantially abut the contiguous ends of the strips 15 and may be, if desired, vulcanized or otherwise adhered thereto. The outer end 67 of leg 61 similarly abuts the contiguous end of vertical strip 15 and may be similarly vulcanized or otherwise adhered thereto, if desired.

Panels 63, 64, and 65, are drawn together to effect a substantially water-tight seal at the T-filler piece 60 by three bolts 42 connecting, respectively, vertical studs 8 and 9, horizontal studs 9*a* and 9*c*, and horizontal studs 9*b* and 9*c*. Horizontal filler strip 30 may extend across the horizontal leg 62 while filler strip 30*c* has its end in T-filler piece 60 near filler strip 30.

It is thought that the invention and its numerous attendant advantages will be fully understood from the foregoing description, and it is obvious that numerous changes may be made in the form, construction and arrangement of the several parts without departing from the spirit or scope of the invention, or sacrificing any of its attendant advantages, the form herein disclosed being a preferred embodiment for the purpose of illustrating the invention.

The invention is hereby claimed as follows:

1. A concrete form system comprising a pair of substantially aligned panels having spaced, opposing edges, said opposing edges each having a longitudinal, tapered groove therein, an elastomer filler strip having an elongated web filling the space between said edges, elastomer, elongated, tapered ribs extending from opposite sides of said web in substantially mating fit respectively in said tapered grooves, and means on said panels drawing said edges together to compress therebetween said filler strip.

2. A forms system as claimed in claim 1 wherein said web has an edge substantially flush with concrete-retaining faces of said panels to provide a smooth surfaced joint.

3. A concrete forms system as claimed in claim 1, an elongated base strip extending along one edge of said web with oppositely and laterally directed, elongated flanges, and each flange having a face pressing against a respective face of said panels contiguous to their respective edges.

4. A concrete forms system as claimed in claim 3

wherein said base strip has opposite said edge of said web an elongated, longitudinal groove of sufficient depth in the direction of said web to provide at the bases of said flanges narrow, elastomer, elongated, flexible necks connecting said edge of said web and said respective flanges, and a removable filler strip in said groove.

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J. HOWARD FLINT, JR., *Primary Examiner.*

U.S. Cl. X.R.

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