Feb. 26, 1957 D. M. DE CANIO 2,782,483

LINER CLAMP FOR PANEL FORMS

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Fig. 1

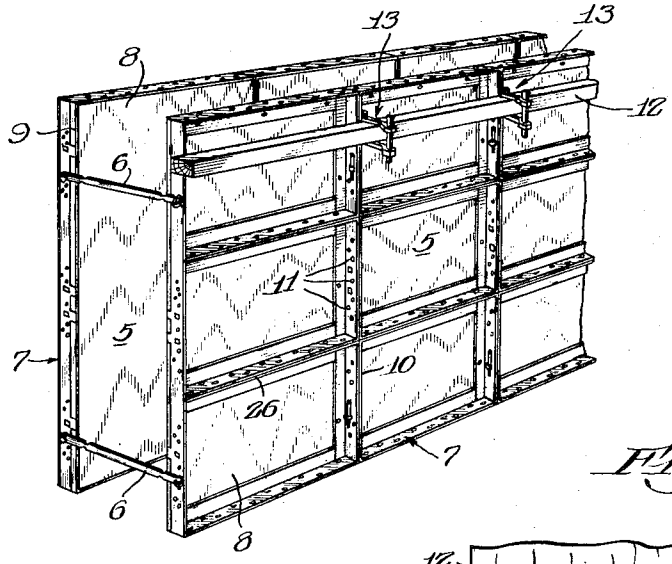
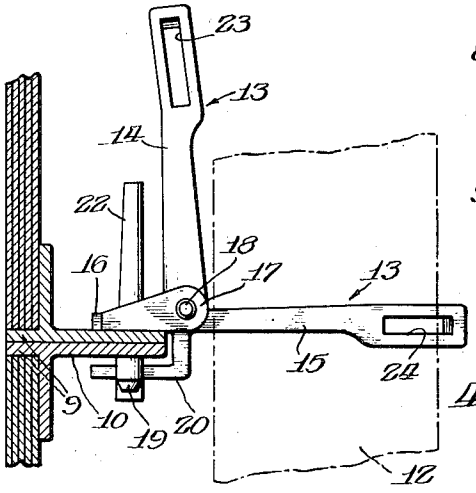
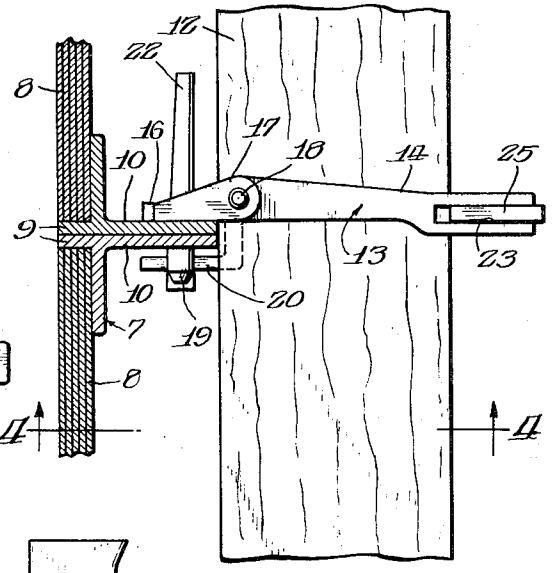


Fig. 3

Fig. 2





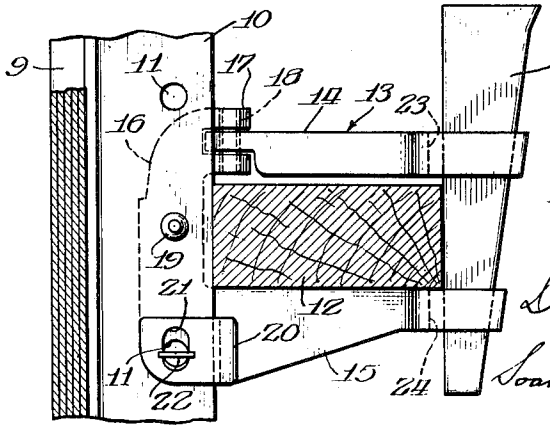


Fig. 4

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LINER CLAMP FOR PANEL FORMS

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2 Claims. (Cl. 25—131)

This invention relates generally to forms used in the construction of concrete walls and the like, and is more particularly concerned with the well known type of panel forms wherein the panel facing is held by a rectangular metal frame, as shown in Anderson Patent No. 1,970,547, dated August 21, 1934.

The framed panels are united in edge abutting relation in the Anderson construction referred to, with the panel facings presenting a plane inner surface for retaining the concrete to be poured. The exposed side of the form includes the flange portions of the several frames, which project outwardly from the panel facings, with the adjoining flanges being joined by a temporary clamping means.

In the usual construction, the wall to be formed is of considerable length and, consequently, the panel forms must be further stiffened against the lateral thrust of the wet concrete by heavy horizontal stringers or liners that extend across the outer sides of the panels, as illustrated in the above mentioned Anderson patent. Similarly, vertical stringers are used to maintain vertical alignment of the panels when the assembled panel forms are of considerable height.

A novel and improved form of liner clamp for use with panel forms of the type referred to above is the subject of my pending application Serial No. 328,326. The present application is a continuation-in-part of the aforementioned pending application.

The principal object of the present invention is to provide an improved form of clamp for securing the liners to the panel forms.

The accompanying drawings illustrate a preferred embodiment of the present invention, wherein:

Figure 1 is a perspective view of a panel type wall form, including several separable panels held in place by liners which are secured to the form by the improved liner clamps.

Figure 2 is an enlarged plan view of one of the liner clamps in position on a panel frame, which is shown in section, with a portion of the clamp moved to a position affording clearance for receiving the liner which is indicated by broken lines.

Figure 3 is also an enlarged plan view of one of the liner clamps in position on a panel frame, the panel frame bing shown in section, with the liner held in position by the liner clamp.

Figure 4 is a view, partially in section, taken along the line 4—4 in Figure 3.

In the construction illustrated, the improved liner clamp is used in conjunction with a wall form comprising two series of panels 5, with the opposite facing panel series being united in properly spaced relation to each other by means of form ties 6 of the same construction as those shown in said Anderson Patent No. 1,970,547. The panels 5 are preferably all identical in construction, size, and shape, so as to obviate the necessity of sorting and to facilitate handling and storage.

In the form shown, the panels are rectangular and each

panel comprises an angle iron frame 7 to which is suitably fastened a facing 8, preferably of plywood, in flush relation with the edges presented by a flange portion 9 of the metal frame 7 (Figure 2). The outer side of each of the panel frames presents additional flange portions 10 which project outwardly from the facing 8 and which have transverse openings 11 therethrough adapted for alignment with similar openings in the adjacent panels. As shown in the drawing, the flange portions 9 and 10 completely surround the edges of the facing 8.

The utilization of the form panels 5 in connection with the construction of a wall of any appreciable length or height, or both, obviously requires the use of some means for bracing the panels in addition to the form ties and the means for fastening the adjacent panels together. Accordingly, liners or stringers 12 are, in such instances, positioned in fixed relation to the outside of a series of panels to maintain their aligned relationship. These liners are held in position by a series of clamps which are attached to the panel forms.

Heretofore, the liner clamps were generally of such a nature as to require the time and labor of several persons to fix the relatively long liners in position on the wall forms. Furthermore, the commonly used types of liner clamps are effective only as a support for the liners, although some do attach to the adjoining flange portions of the panels. The illustrated liner clamp is effective both as a means for securing the liner against the wall form to align the several panels thereof and, also, as a means for fixedly uniting the abutting edges of adjacent panels.

In the illustrated embodiment, the improved liner clamp 13 comprises a generally U-shaped bracket or body portion including a pair of bearing arms 14 and 15 disposed in spaced-apart, parallel relation to each other, and a flat bight portion 16. The upper arm 14 is a separable element including a reduced inner end portion which is received between a bifurcated upper end portion 17 of the bight 16 and is hingedly connected thereto by a suitable pin 18, of rolled metal or the like, which extends through aligned openings in the part 17 and the inner end of the arm 14. Adjacent an intermediate section of the bight 16, there is suitably formed a transversely extending pin or stud 19 adapted to fit the openings 11 in the flange portions 10 of the panels 5. The opposite end of the bight portion 16 includes a yoke or U-shaped clamping element formed by an inner end extension 20 of the lower arm 15 disposed in parallel relation to the plane of the bight 16. The yoke thus formed is adapted to receive therebetween, in frictional engagement therewith, a pair of abutting flange portions 10 of the panel form. A pair of aligned openings 21 are preferably formed in the yoke forming part 20 and the bight 16 in position for alignment with one of the pairs of openings 11 in the panel flanges 10. A wedge-shaped pin 22 or the like is placed through the aligned openings to further secure the liner clamp in position on the panel flange.

The outer end portions of the arms 14 and 15 include a pair of aligned openings 23 and 24, respectively, for the insertion of a wedge 25 or the like therethrough. These openings are preferably formed with the innermost edges disposed in a plane normal to the liner supporting surface of the arm 15, and with the opposite edges lying in a plane which is inclined with respect to such liner supporting surface. The inclined edges of the wedge 25 is disposed in sliding engagement with the inclined edges of the openings 23 and 24, so that as the wedge moves downwardly through the openings the inner straight edge of the wedge also moves in a direction parallel to the liner supporting surface of arm 15.

In view of the foregoing, it will be apparent that the clamp 13 is positionable on the panel form, in supported

relation thereto, by inserting the pin **19** through a pair of the aligned openings **11** in a pair of abutting flanges **10** of the form. The clamp is then rotated about the axis of the pin **19** until the yoke **20** frictionally engages a portion of the abutting flanges **10** and the openings **21** are aligned with similar openings **11** through the flanges, whereupon the pin **22** is inserted to secure the clamp in place.

Having positioned two or more of the clamps in aligned relation along the form, the upper arm **14** of each of the clamps is swung about the hingle pin **18** to a position of **90** degrees or more with respect to the fixed, lower arm **15**. In this way the liner-supporting surface of the arm **15** is exposed to readily receive the liner **12** without interference from the upper arm **14** and without need for careful alignment of the liner with the several clamps.

After the liner is seated upon the lower arm **15** of the liner clamp, the upper arm **14** is returned to its position overlying the lower arm and the wedge **25** is positioned through the openings **23** and **24** in edge-engaging relation to the liner. As the wedge is driven downwardly, it forces the inner edge of the liner **12** against the edges of the abutting panel flanges **10**, as seen in Figures 3 and 4. In this latter respect, it will be noted from the drawings (Figure 4), that the relative disposition of the various portions of the liner clamp is such that, when it is in place on the wall form, the entire intermediate bight portion **16** is within the projecting edge of the flange **10** and, consequently, the wooden liner **12** is disposed with its inner edge bearing against the flange edges to maintain lateral alignment of the several panels.

Although shown as adapted for receiving a single liner, the clamp can obviously be formed with a greater spacing between the arm portions **14** and **15** so as to accommodate two or more liners, if desired. It will also be apparent that the liner clamp may be used for securing vertically disposed liners in position by simply placing the pin **19** in one of the openings provided in the horizontal flanges of the panel and locking the clamp in place with the pin **22** through another of the flange openings. This may be done by utilizing one of the transverse panel braces **26** (Figure 1) or by placing the clamp on a pair of abutting horizontal flange portions formed by placing one panel on top of another in vertically extending relation thereto.

Furthermore, although shown and described with respect to a particular embodiment, it will be apparent to those skilled in the art that other modifications may be made without departing from the principles of this invention.

I claim:

1. A liner clamp for use with a concrete form including a plurality of panel forms each having a frame with laterally extending flange portions, the panel forms being arranged in edge-engaging relation to one another and having aligned openings along the extending flange portions thereof, said clamp comprising a generally U-shaped bracket with the bight portion thereof having a laterally projecting pin disposed for insertion in a pair of the aligned openings through adjoining panel flanges to pivotally support the clamp, a clamping element disposed on said bracket to embrace the adjoining panel flanges which receive said pin at a position spaced from said pin, said U-shaped bracket being adapted to embrace a liner between the leg portions of said bracket which extend outwardly from the panel forms, one of said leg portions being hingedly connected at its inner end to the bight portion of said bracket for movement relative to the other of said leg portions, said pin, clamping element and the inner edge of said bight portion of said clamp being disposed relative to one another so that when said liner clamp is positioned on adjoining panel flanges said inner edge of said bight portion extends inwardly of the outer edges of the adjoining flanges, said U-shaped bracket including means defining a pair of aligned openings through the outer ends of said leg portions, and means movably positionable through the aligned openings in said leg portions, whereby a liner embraced by said U-shaped bracket may be wedged against the edges of the liner clamp supporting flanges by said movably positionable means.

2. A liner clamp for use with a concrete form including a plurality of panel forms each having a frame with laterally extending flange portions, the panel forms being arranged in edge-engaging relation to one another and having aligned openings along the extending flange portions thereof, said liner clamp comprising a U-shaped bracket with the bight portion thereof including a laterally projecting pin and a generally U-shaped clamping element spaced from said pin, whereby said liner clamp may be supported on the panel forms by inserting said pin in a pair of the aligned openings through adjoining panel flanges and by pivoting the bracket about the axis of said pin to place said U-shaped clamping element in engagement with opposite sides of the panel flanges, said U-shaped bracket being thereby positioned with the legs of said bracket extending outwardly from the panel forms, one of said leg portions being hingedly connected at its inner end to the bight portion of said bracket for movement through an arc of at least 90 degrees with respect to the other of said leg portions, said U-shaped clamping element being disposed on said bracket so that the bight portion thereof is disposed outwardly of the bight portion of said U-shaped bracket when the liner clamp is supported by adjoining panel flanges, whereby a liner disposed between the legs of said U-shaped bracket may firmly abut the edges of the liner clamp-supporting flanges, said U-shaped bracket including a pair of openings through the outer end portions of the legs of said bracket in generally aligned relation, the edges of said openings which are disposed closest to the bight portion of said U-shaped bracket being in a first plane which is normal to the direction of extension of said bracket legs and the opposite edges of said openings being disposed in a second plane which is inclined with respect to said first plane, and wedge shaped means movably positionable through the openings in said bracket so as to afford a wedging action against a liner disposed between the legs of the bracket.

References Cited in the file of this patent

UNITED STATES PATENTS

953,383	Holman	Mar. 29, 1910
1,475,424	Bosco	Nov. 27, 1923
1,541,896	Bosco	June 16, 1925
1,950,650	Beghetti	Mar. 13, 1934
2,236,616	Bosco	Apr. 1, 1941
2,237,366	Schlatter	Apr. 8, 1941
2,307,274	Jankins	Jan. 5, 1943