



CONNECTING DEVICE FOR FORM PANELS

This invention relates to a connecting device, more particularly to a connecting device which interconnects two juxtaposed upright form panels used in forming a concrete wall and which facilitates stripping of the
5 form panels from the concrete wall.

Presently, inner and outer steel form panels are usually used to define therebetween a pouring space into which concrete is poured and cast to form the surrounding walls of a building. After the concrete is
10 cast, the outer steel form panels are easily removed with the use of a lifting equipment. However, the inner steel form panels cannot be easily removed with the use of the lifting equipment since the space formed
15 among the inner steel form panels is insufficient large to accommodate the lifting equipment. Furthermore, since the inner steel form panels are in tight contact with adjacent steel form panels which are used to form an adjacent concrete surrounding wall of the building,
20 stripping of the form panels from the concrete surrounding wall cannot be conveniently performed.

The main objective of the present invention is to provide a connecting device which interconnects two juxtaposed upright form panels used in forming a
25 concrete wall and which facilitates stripping of the form panels from the concrete wall.



According to the present invention, a connecting device is disclosed for interconnecting two juxtaposed upright form panels used in forming a concrete wall. The form panels have adjacent mating edges between which an edge connecting plate is interposed tightly and removably. The connecting device includes first and second mounting plates to be secured respectively to the form panels adjacent to the mating edges of the form panels. The first mounting plate is formed with a through-hole. The second mounting plate is formed with a first screw hole which is aligned with the through-hole in the first mounting plate and a second screw hole on one side of the first screw hole. Each of a pair of guide rods has an end portion extending through the first mounting plate and secured to the second mounting plate so as to permit relative lateral movement between the form panels. A driving screw has a threaded shank portion which extends through the through-hole in the first mounting plate and which engages threadably the first screw hole in the second mounting plate, and a head portion which is sized to prevent extension thereof through the through-hole in the first mounting plate. A positioning screw has a threaded shank portion extending threadably through the second screw hole in the second mounting plate, and abutting against the first mounting plate. When the edge connecting plate is removed, and the positioning



screw is loosened to move the positioning screw away from the first mounting plate, rotation of the driving screw in a predetermined direction causes movement of the first mounting plate toward the second mounting plate so as to facilitate stripping of the form panels from the concrete wall.

Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiment, with reference to the accompanying drawings, of which:

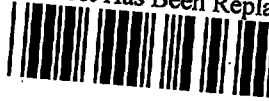
Fig. 1 is a perspective view illustrating two juxtaposed form panels which are used in forming a concrete wall and which are to be provided with a connecting device according to the present invention;

Fig. 2 is an enlarged view showing portions of the form panels of Fig. 1, the form panels having adjacent mating edges between which an edge connecting plate is interposed tightly and removably;

Fig. 3 is a plan view illustrating the form panels which are incorporated with a connecting device according to the present invention;

Fig. 4 is a side view illustrating the relationship between the form panels and the connecting device according to the present invention;

Fig. 5 is a top view similar to that of Fig. 3, the mounting plates of the connecting device according to



the present invention being moved toward each other;
and

Fig. 6 is a side view illustrating the relationship
between the form panels and the connecting device
5 according to the present invention when the mounting
plates are moved toward each other.

Fig. 1 shows two juxtaposed upright form panels 1,1'
which are to be incorporated with a connecting device
according to the present invention and which
10 cooperatively define a receiving space 10 between
adjacent mating edges thereof. The form panels 1,1'
are used in forming a concrete wall (not shown) and are
developed by the applicant. The structure of the form
panels 1,1' are generally identical. Each of the form
15 panels 1,1' consists of a plurality of panel members 11
which are arranged side by side. Each panel member 11
has a plurality of upright support ribs 12 connected
perpendicularly thereto on a back surface of the panel
member 11. The form panels 1,1' have aligned
20 horizontal reinforcing beam members 13 connected
transversely to the support ribs 12.

Referring to Figs. 2 and 3, each form panel 1,1' is
formed with a plurality of vertically aligned
positioning seat members 4 adjacent to the mating edge
25 thereof. Each positioning seat member 4 on one of the
form panels 1,1' is aligned with a corresponding seat
member 4 on the other one of the form panels 1,1'.



Each seat member 4 has a lower portion formed with a retaining opening 42 which opens toward the respective form panel 1,1'. When the form panels 1,1' are used in forming the concrete wall, an edge connecting plate 2 is interposed between the mating edges of the form panels 1,1'. The edge connecting plate 2 has an upright plate portion 21 and an insert portion 22 which extends from the plate portion 21 and which is received fittingly in the receiving space 10. The width of the plate portion 21 is slightly greater than that of the insert portion 22 so as to prevent movement of the connecting plate 2 toward the form panels 1,1' in a direction perpendicular to the latter. A generally inverted T-shaped retaining plate 3 has an elongated retaining portion 32 and an elongated operating portion 31 extending from the retaining portion 32. The retaining plate 3 is initially provided adjacent to the lower portion of an aligned pair of seat members 4 on the form panels 1,1'. Then, the operating portion 31 is rotated 90 degrees relative to the form panels 1,1' to cause the retaining portion 32 to engage the openings 42 of the aligned pair of seat members 4 on the form panels 1,1' at two distal ends of the retaining portion 32. It should be noted that the thickness of the retaining portion 32 is equal to the width of the opening 42, and that the sum of the width of the retaining portion 32 and the thickness of the



plate portion 21 of the connecting plate 2 is equal to the distance between one end of the opening 42 and the form panel 1,1' such that movement of the retaining plate 3 relative to the seat member 4 is prohibited, thereby preventing movement of the connecting plate 2 away from the form panels 1,1' in the direction perpendicular to the latter. It should also be noted that each aligned pair of seat members 4 on the form panels 1,1' engages a corresponding retaining plate 3. However, only one retaining plate 3 is illustrated in the drawings.

Referring now to Figs. 3 and 4, the connecting device according to the present invention is provided on the beam members 13 of the form panels 1,1' and includes first and second mounting plates 5,5', a pair of guide rods 6, a driving screw 7 and two positioning screws 8.

The first and second mounting plates 5,5' are secured respectively to the beam members 13 of the form panels 1,1' adjacent to the mating edges of the form panels 1,1' by means of a locking bolt 50 which extends through the respective mounting plate 5,5'. The first mounting plate 5 is formed with a through-hole 51. The second mounting plate 5' is formed with a first screw hole 51' which is aligned with the through-hole 51 in the first mounting plate 5 and two second screw holes 52' on two sides of the first screw hole 51'.



Each of the guide rods 6 has a head portion 61 abutting against the first mounting plate 5, a larger rod portion extending through the first mounting plate 5, a smaller rod portion 62 extending through the second mounting plate 5', and a threaded end portion 63 which extends through the second mounting plate 5' and which is provided with a nut 64 so as to secure the guide rod 6 to the second mounting plate 5' in order to permit relative lateral movement between the first and second mounting plates 5,5' and thus, the form panels 1,1'.

The driving screw 7 has a threaded shank portion 72 which extends through the through-hole 51 in the first mounting plate 5 and which engages threadably the first screw hole 51' in the second mounting plate 5', and a head portion 71 which is sized to prevent extension thereof through the through-hole 51 in the first mounting plate 5.

Each of the positioning screws 8 has a threaded shank portion 81 which extends threadably through a respective one of the second screw holes 52' in the second mounting plate 5', and abuts against the first mounting plate 5.

Referring now to Figs. 3, 5 and 6, when stripping the form panels 1,1' from a cast concrete wall, the retaining plates 3 are initially disengaged from the seat members 4 so as to permit removal of the



connecting plate 2. Then, the positioning screws 8 are loosened to move the positioning screws 8 away from the first mounting plate 5. At this time, rotation of the driving screw 7 in a predetermined direction causes movement of the first mounting plate 5 toward the second mounting plate 5'. Since the mounting plates 5,5' are secured to the beam members 13 of the form panels 1,1', the form panel 1 is thus moved toward the form panel 1' so that the form panels 1,1' are no longer in tight contact with adjacent form panels (not shown), thereby facilitating stripping of the form panels 1,1' from the concrete wall. It should be noted that the number of positioning screws 8 and driving screw 7 employed may be varied as desired. Since the form panels 1,1' are made of steel, the attachment force of concrete on the form panels 1,1' is relatively low, thereby minimizing the force required to rotate the driving screw 7.

**CLAIMS:**

1. A connecting device for interconnecting two juxtaposed upright form panels used in forming a concrete wall, said form panels having adjacent mating edges between which an edge connecting plate is interposed tightly and removably, said connecting device comprising:

first and second mounting plates secured respectively to said form panels adjacent to said mating edges of said form panels, said first mounting plate being formed with a through-hole, said second mounting plate being formed with a first screw hole which is aligned with said through-hole in said first mounting plate and a second screw hole on one side of said first screw hole;

a pair of guide rods, each of which having an end portion extending through said first mounting plate and secured to said second mounting plate so as to permit relative lateral movement between said form panels;

a driving screw having a threaded shank portion which extends through said through-hole in said first mounting plate and which engages threadably said first screw hole in said second mounting plate, and a head portion which is sized to prevent extension thereof through said through-hole in said first mounting plate; and



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a positioning screw having a threaded shank portion extending threadably through said second screw hole in said second mounting plate, and abutting against said first mounting plate;

5 whereby, when said edge connecting plate is removed and said positioning screw is loosened to move said positioning screw away from said first mounting plate, rotation of said driving screw in a predetermined direction causes movement of said first mounting plate
10 toward said second mounting plate so as to facilitate stripping of said form panels from said concrete wall.

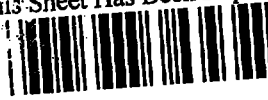
2. A connecting device substantially as hereinbefore described with reference to and as illustrated in Figs. 1 to 6 of the accompanying drawings.

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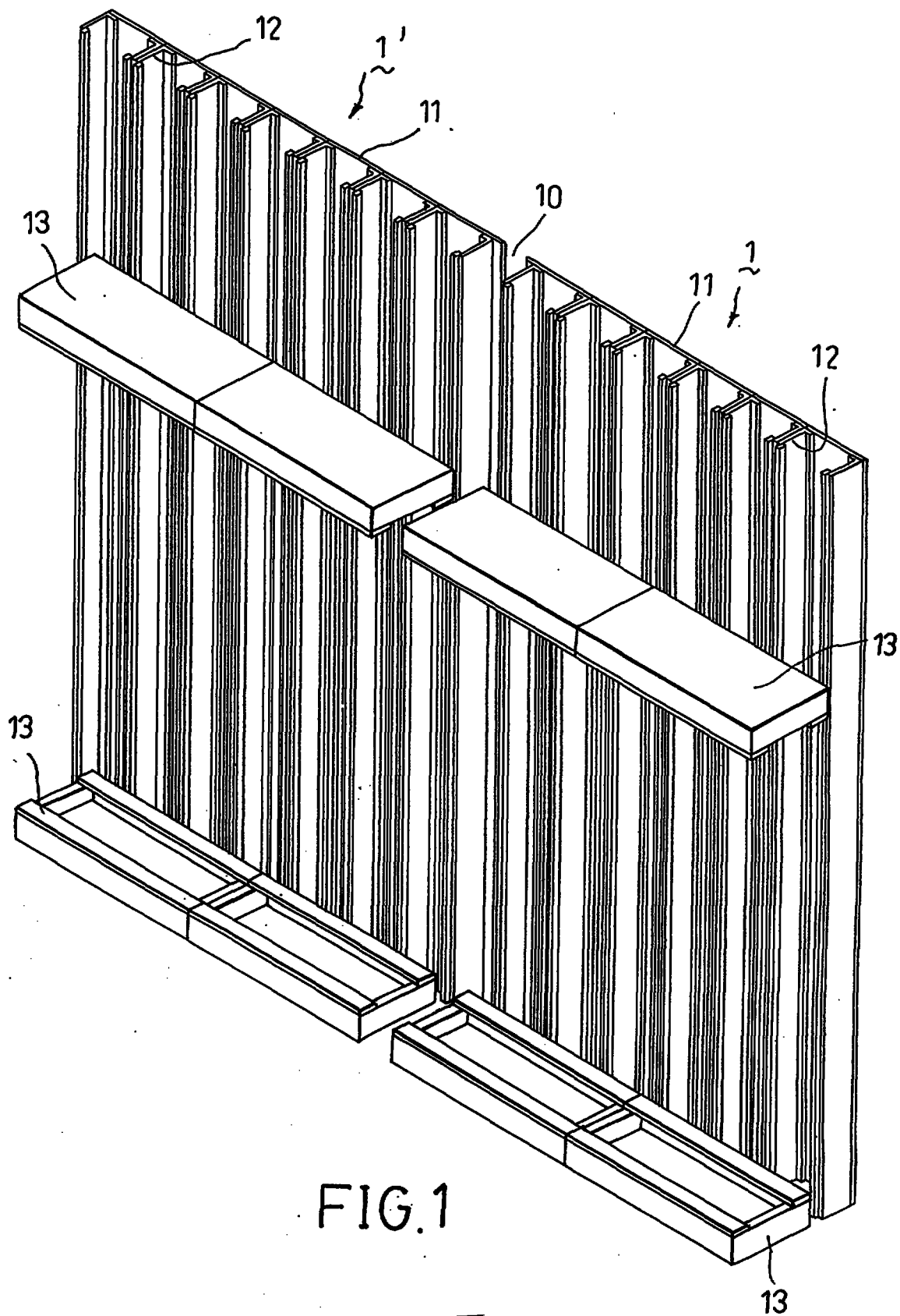
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**ABSTRACT OF THE DISCLOSURE****CONNECTING DEVICE FOR FORM PANELS**

A connecting device is provided for interconnecting two juxtaposed upright form panels 1,1' used in forming a concrete wall. The panels 1,1' have adjacent mating edges between which an edge connecting plate 2 is interposed tightly and removably. The connecting device includes first and second mounting plates 5,5' secured respectively to the panels 1,1' adjacent to the mating edges of the panels 1,1'. Each of a pair of guide rods 6 has an end portion 61 extending through the mounting plate 5 and secured to the mounting plate 5' so as to permit relative lateral movement between the panels 1,1'. A driving screw 7 has a threaded shank portion 72 which extends through the mounting plate 5 and which extends threadably through the mounting plate 5'. A positioning screw 8 has a threaded shank portion 81 extending threadably through the mounting plate 5' and abutting against the mounting plate 5. When the edge connecting plate 2 is removed, and the positioning screw 8 is loosened to move the positioning screw 8 away from the mounting plate 5, rotation of the driving screw 7 in a predetermined direction causes movement of the mounting plate 5 toward the mounting plate 5' so as to facilitate stripping of the panels 1,1' from the concrete wall.

(Figure 3)

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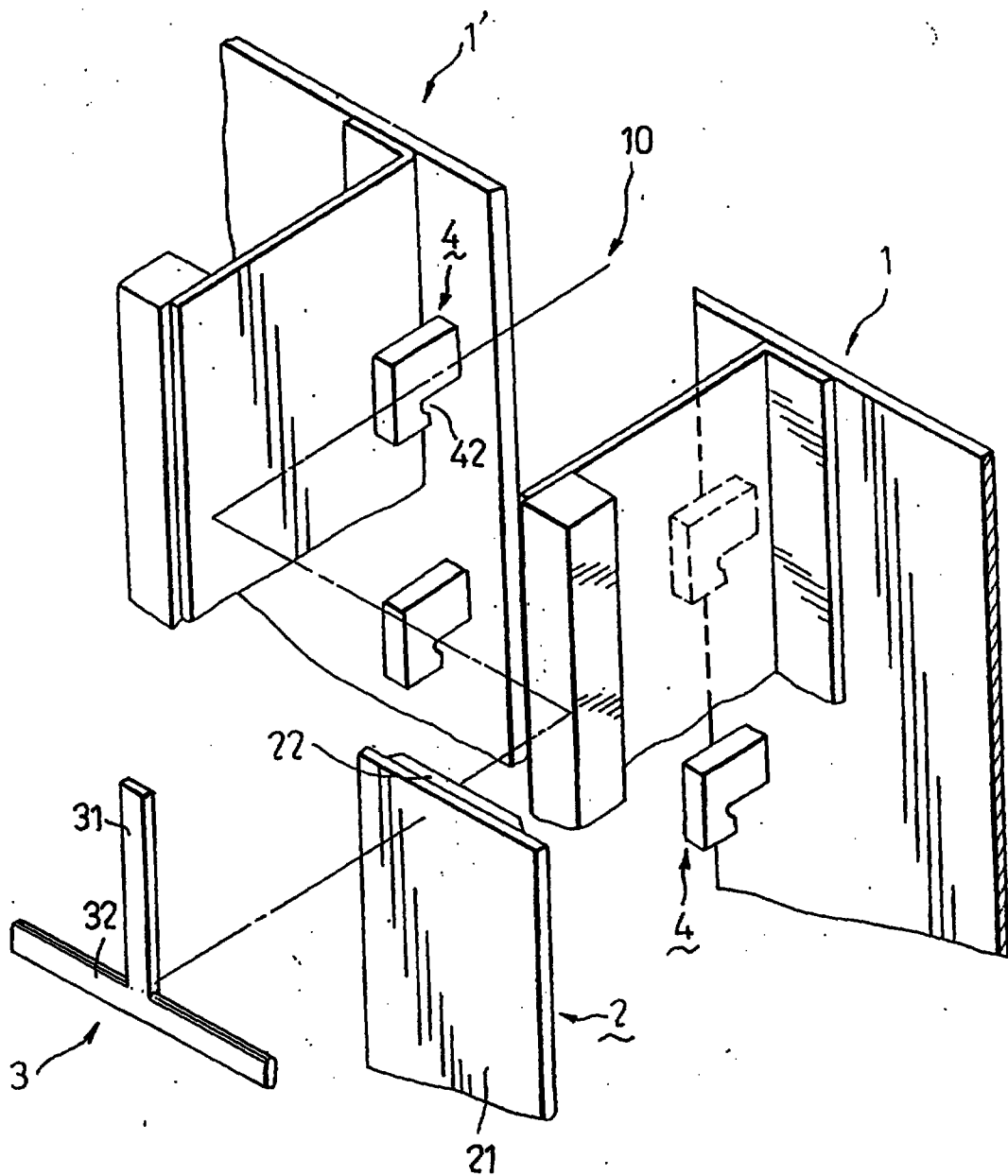


FIG. 2



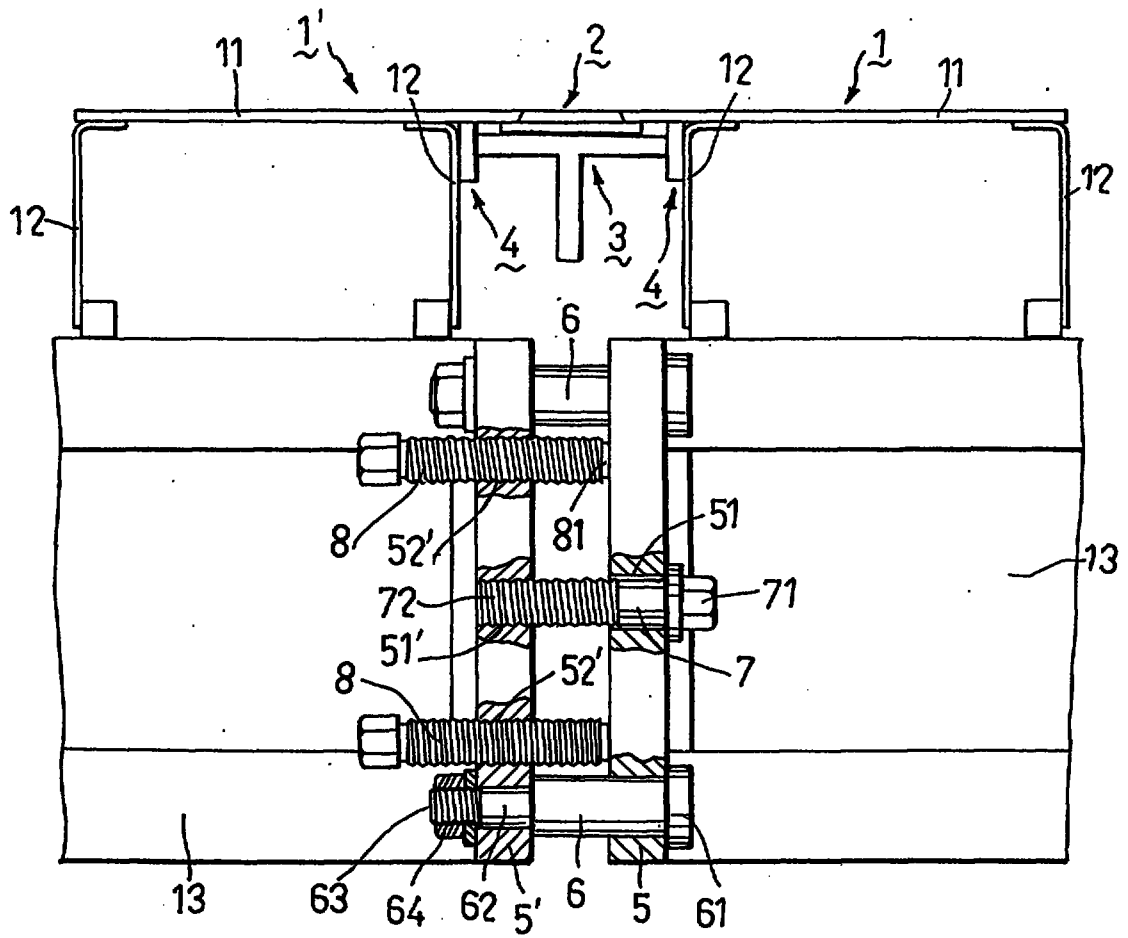


FIG. 3

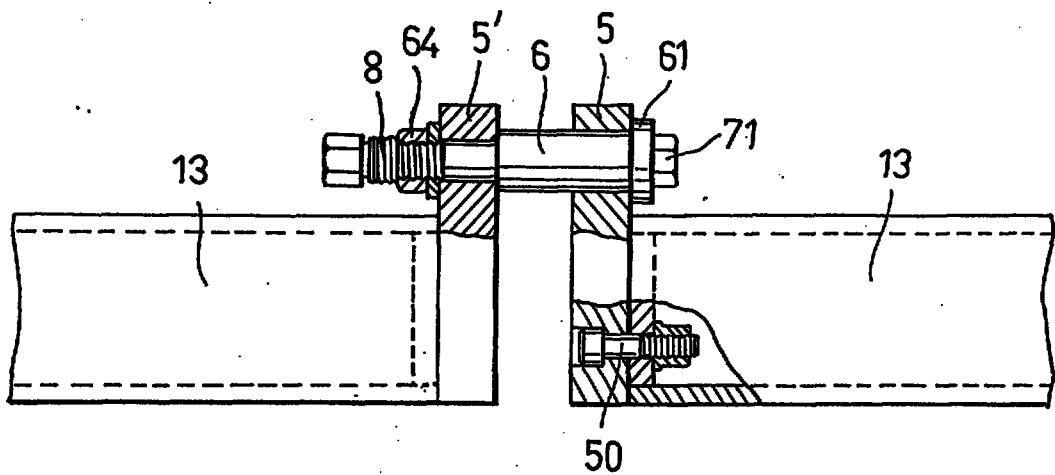


FIG. 4



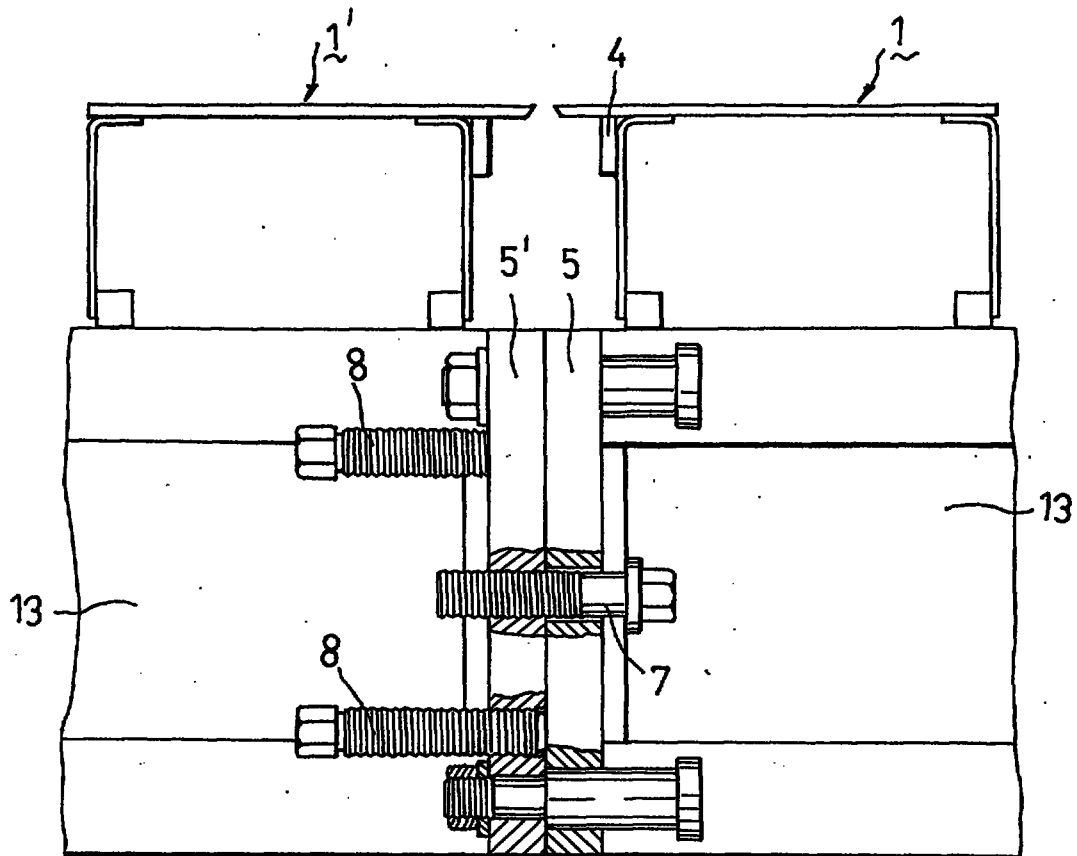


FIG. 5

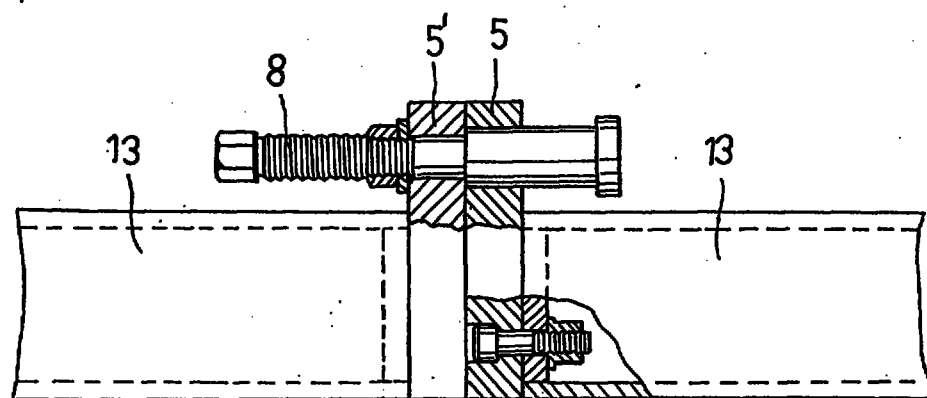


FIG. 6



CONNECTING DEVICE FOR FORM PANELS

This invention relates to a connecting device, more particularly to a connecting device which interconnects two juxtaposed upright form panels used in forming a concrete wall and which facilitates stripping of the form panels from the concrete wall.

Presently, inner and outer steel form panels are usually used to define therebetween a pouring space into which concrete is poured and cast to form the surrounding walls of a building. After the concrete is cast, the outer steel form panels are easily removed with the use of a lifting equipment. However, the inner steel form panels cannot be easily removed with the use of the lifting equipment since the space formed among the inner steel form panels is insufficient large to accommodate the lifting equipment. Furthermore, since the inner steel form panels are in tight contact with adjacent steel form panels which are used to form an adjacent concrete surrounding wall of the building, stripping of the form panels from the concrete surrounding wall cannot be conveniently performed.

The main objective of the present invention is to provide a connecting device which interconnects two juxtaposed upright form panels used in forming a concrete wall and which facilitates stripping of the form panels from the concrete wall.

According to the present invention, a connecting device is disclosed for interconnecting two juxtaposed upright form panels used in forming a concrete wall. The form panels have adjacent mating edges between which an edge connecting plate is interposed tightly and removably. The connecting device includes first and second mounting plates to be secured respectively to the form panels adjacent to the mating edges of the form panels. The first mounting plate is formed with a through-hole. The second mounting plate is formed with a first screw hole which is aligned with the through-hole in the first mounting plate and a second screw hole on one side of the first screw hole. Each of a pair of guide rods has an end portion extending through the first mounting plate and secured to the second mounting plate so as to permit relative lateral movement between the form panels. A driving screw has a threaded shank portion which extends through the through-hole in the first mounting plate and which engages threadably the first screw hole in the second mounting plate, and a head portion which is sized to prevent extension thereof through the through-hole in the first mounting plate. A positioning screw has a threaded shank portion extending threadably through the second screw hole in the second mounting plate, and abutting against the first mounting plate. When the edge connecting plate is removed, and the positioning

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screw is loosened to move the positioning screw away from the first mounting plate, rotation of the driving screw in a predetermined direction causes movement of the first mounting plate toward the second mounting plate so as to facilitate stripping of the form panels from the concrete wall.

Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiment, with reference to the accompanying drawings, of which:

Fig. 1 is a perspective view illustrating two juxtaposed form panels which are used in forming a concrete wall and which are to be provided with a connecting device according to the present invention;

Fig. 2 is an enlarged view showing portions of the form panels of Fig. 1, the form panels having adjacent mating edges between which an edge connecting plate is interposed tightly and removably;

Fig. 3 is a plan view illustrating the form panels which are incorporated with a connecting device according to the present invention;

Fig. 4 is a side view illustrating the relationship between the form panels and the connecting device according to the present invention;

Fig. 5 is a top view similar to that of Fig. 3, the mounting plates of the connecting device according to

the present invention being moved toward each other;
and

Fig. 6 is a side view illustrating the relationship between the form panels and the connecting device according to the present invention when the mounting
5 plates are moved toward each other.

Fig. 1 shows two juxtaposed upright form panels 1,1' which are to be incorporated with a connecting device according to the present invention and which
10 cooperatively define a receiving space 10 between adjacent mating edges thereof. The form panels 1,1' are used in forming a concrete wall (not shown) and are developed by the applicant. The structure of the form panels 1,1' are generally identical. Each of the form
15 panels 1,1' consists of a plurality of panel members 11 which are arranged side by side. Each panel member 11 has a plurality of upright support ribs 12 connected perpendicularly thereto on a back surface of the panel member 11. The form panels 1,1' have aligned
20 horizontal reinforcing beam members 13 connected transversely to the support ribs 12.

Referring to Figs. 2 and 3, each form panel 1,1' is formed with a plurality of vertically aligned positioning seat members 4 adjacent to the mating edge
25 thereof. Each positioning seat member 4 on one of the form panels 1,1' is aligned with a corresponding seat member 4 on the other one of the form panels 1,1'.

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Each seat member 4 has a lower portion formed with a retaining opening 42 which opens toward the respective form panel 1,1'. When the form panels 1,1' are used in forming the concrete wall, an edge connecting plate 2 is interposed between the mating edges of the form panels 1,1'. The edge connecting plate 2 has an upright plate portion 21 and an insert portion 22 which extends from the plate portion 21 and which is received fittingly in the receiving space 10. The width of the plate portion 21 is slightly greater than that of the insert portion 22 so as to prevent movement of the connecting plate 2 toward the form panels 1,1' in a direction perpendicular to the latter. A generally inverted T-shaped retaining plate 3 has an elongated retaining portion 32 and an elongated operating portion 31 extending from the retaining portion 32. The retaining plate 3 is initially provided adjacent to the lower portion of an aligned pair of seat members 4 on the form panels 1,1'. Then, the operating portion 31 is rotated 90 degrees relative to the form panels 1,1' to cause the retaining portion 32 to engage the openings 42 of the aligned pair of seat members 4 on the form panels 1,1' at two distal ends of the retaining portion 32. It should be noted that the thickness of the retaining portion 32 is equal to the width of the opening 42, and that the sum of the width of the retaining portion 32 and the thickness of the

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plate portion 21 of the connecting plate 2 is equal to the distance between one end of the opening 42 and the form panel 1,1' such that movement of the retaining plate 3 relative to the seat member 4 is prohibited, thereby preventing movement of the connecting plate 2 away from the form panels 1,1' in the direction perpendicular to the latter. It should also be noted that each aligned pair of seat members 4 on the form panels 1,1' engages a corresponding retaining plate 3. However, only one retaining plate 3 is illustrated in the drawings.

Referring now to Figs. 3 and 4, the connecting device according to the present invention is provided on the beam members 13 of the form panels 1,1' and includes first and second mounting plates 5,5', a pair of guide rods 6, a driving screw 7 and two positioning screws 8.

The first and second mounting plates 5,5' are secured respectively to the beam members 13 of the form panels 1,1' adjacent to the mating edges of the form panels 1,1' by means of a locking bolt 50 which extends through the respective mounting plate 5,5'. The first mounting plate 5 is formed with a through-hole 51. The second mounting plate 5' is formed with a first screw hole 51' which is aligned with the through-hole 51 in the first mounting plate 5 and two second screw holes 52' on two sides of the first screw hole 51'.

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Each of the guide rods 6 has a head portion 61 abutting against the first mounting plate 5, a larger rod portion extending through the first mounting plate 5, a smaller rod portion 62 extending through the second mounting plate 5', and a threaded end portion 63 which extends through the second mounting plate 5' and which is provided with a nut 64 so as to secure the guide rod 6 to the second mounting plate 5' in order to permit relative lateral movement between the first and second mounting plates 5, 5' and thus, the form panels 1, 1'.

The driving screw 7 has a threaded shank portion 72 which extends through the through-hole 51 in the first mounting plate 5 and which engages threadably the first screw hole 51' in the second mounting plate 5', and a head portion 71 which is sized to prevent extension thereof through the through-hole 51 in the first mounting plate 5.

Each of the positioning screws 8 has a threaded shank portion 81 which extends threadably through a respective one of the second screw holes 52' in the second mounting plate 5', and abuts against the first mounting plate 5.

Referring now to Figs. 3, 5 and 6, when stripping the form panels 1, 1' from a cast concrete wall, the retaining plates 3 are initially disengaged from the seat members 4 so as to permit removal of the

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connecting plate 2. Then, the positioning screws 8 are loosened to move the positioning screws 8 away from the first mounting plate 5. At this time, rotation of the driving screw 7 in a predetermined direction causes movement of the first mounting plate 5 toward the second mounting plate 5'. Since the mounting plates 5,5' are secured to the beam members 13 of the form panels 1,1', the form panel 1 is thus moved toward the form panel 1' so that the form panels 1,1' are no longer in tight contact with adjacent form panels (not shown), thereby facilitating stripping of the form panels 1,1' from the concrete wall. It should be noted that the number of positioning screws 8 and driving screw 7 employed may be varied as desired. Since the form panels 1,1' are made of steel, the attachment force of concrete on the form panels 1,1' is relatively low, thereby minimizing the force required to rotate the driving screw 7.

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**CLAIMS:**

1. A connecting device for interconnecting two juxtaposed upright form panels used in forming a concrete wall, said form panels having adjacent mating edges between which an edge connecting plate is interposed tightly and removably, said connecting device comprising:

first and second mounting plates secured respectively to said form panels adjacent to said mating edges of said form panels, said first mounting plate being formed with a through-hole, said second mounting plate being formed with a first screw hole which is aligned with said through-hole in said first mounting plate and a second screw hole on one side of said first screw hole;

a pair of guide rods, each of which having an end portion extending through said first mounting plate and secured to said second mounting plate so as to permit relative lateral movement between said form panels;

a driving screw having a threaded shank portion which extends through said through-hole in said first mounting plate and which engages threadably said first screw hole in said second mounting plate, and a head portion which is sized to prevent extension thereof through said through-hole in said first mounting plate; and

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a positioning screw having a threaded shank portion extending threadably through said second screw hole in said second mounting plate, and abutting against said first mounting plate;

5 whereby, when said edge connecting plate is removed and said positioning screw is loosened to move said positioning screw away from said first mounting plate, rotation of said driving screw in a predetermined direction causes movement of said first mounting plate
10 toward said second mounting plate so as to facilitate stripping of said form panels from said concrete wall.

2. A connecting device substantially as hereinbefore described with reference to and as illustrated in Figs. 1 to 6 of the accompanying drawings.

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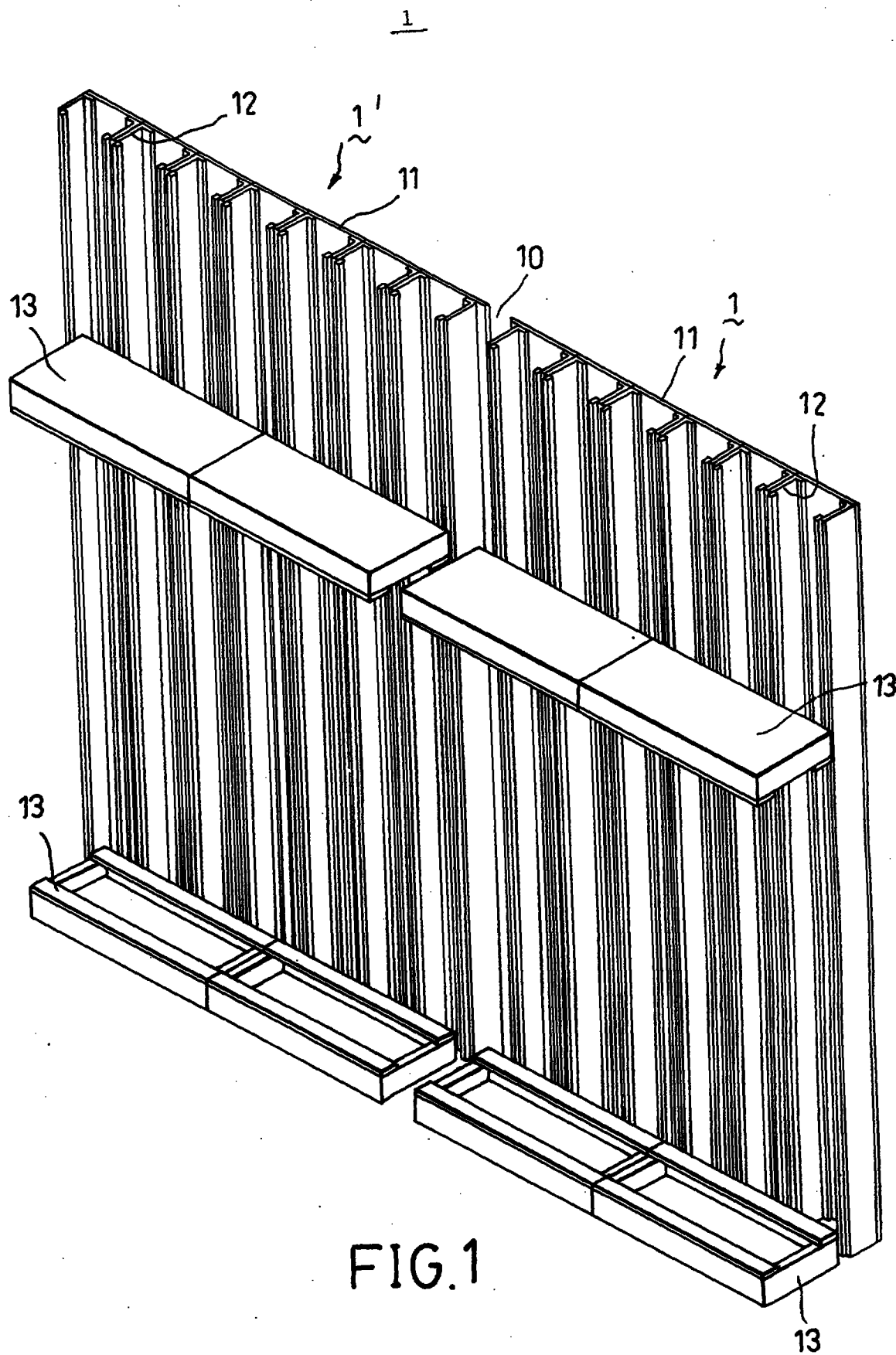
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ABSTRACT

CONNECTING DEVICE FOR FORM PANELS

A connecting device interconnects two juxtaposed upright form panels 1,1' used in forming a concrete wall. The panels 1,1' have adjacent mating edges between which an edge connecting plate 2 is interposed tightly and removably. The connecting device includes first and second mounting plates 5,5' secured respectively to the panels 1,1' adjacent to the mating edges. Each of a pair of guide rods 6 extends through the plate 5 and is secured to the plate 5' so as to permit relative lateral movement between the panels 1,1'. A driving screw 7 extends through the plate 5 and extends threadably through the plate 5'. A positioning screw 8 extends threadably through the plate 5' and abuts against the plate 5. When the plate 2 is removed and the screw 8 is loosened, rotation of the screw 7 can cause movement of the plate 5 toward the plate 5' so as to facilitate stripping of the panels 1,1' from the concrete wall.

Figure 3



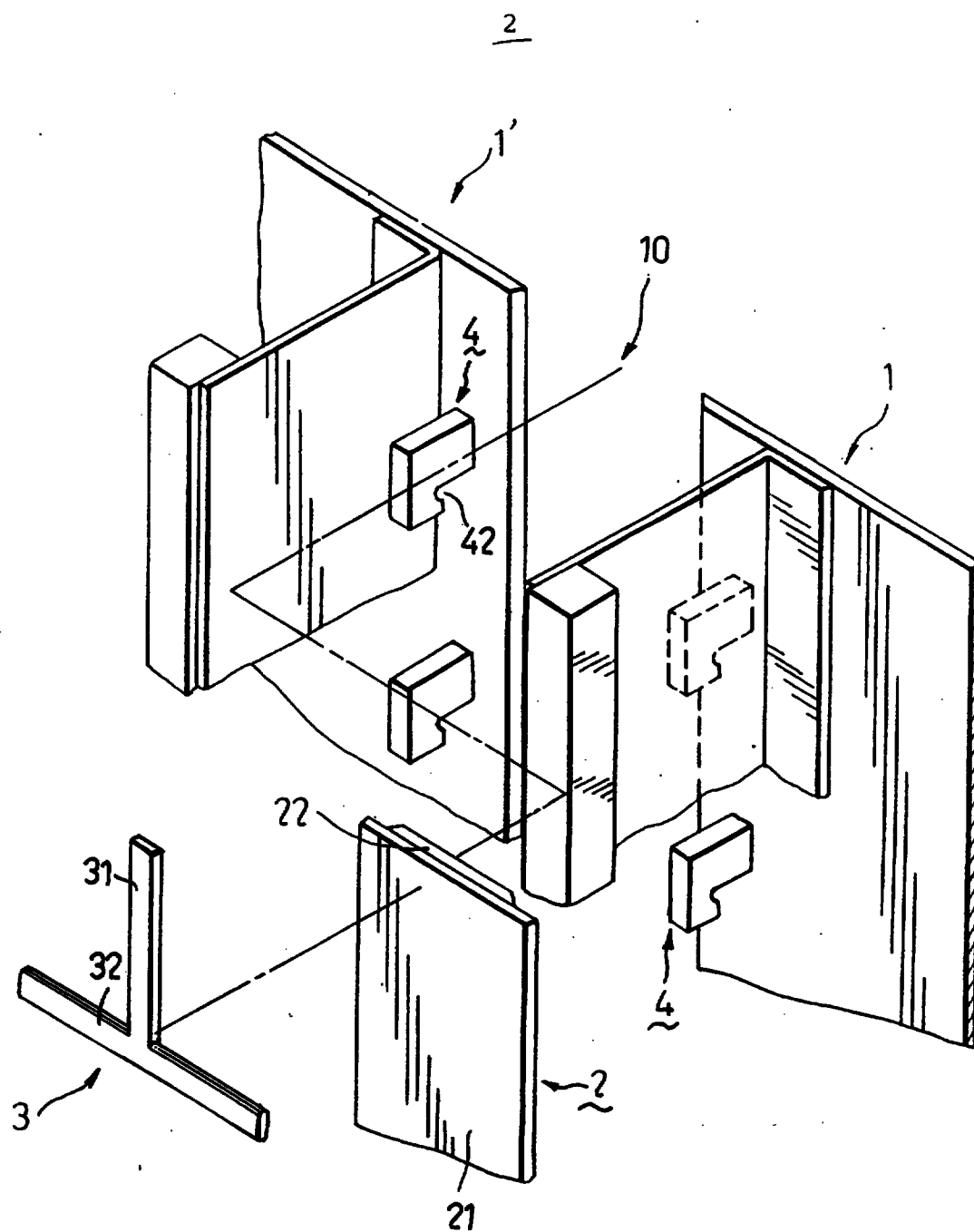


FIG.2



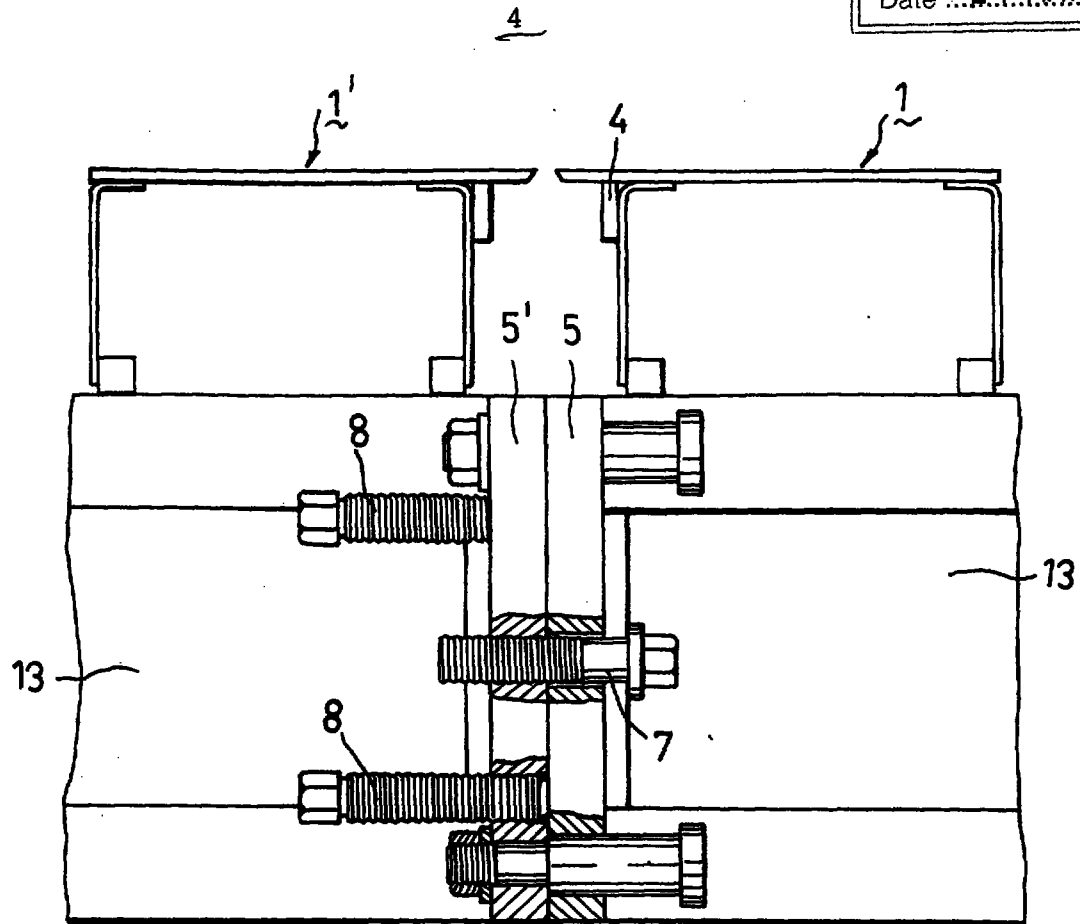


FIG. 5

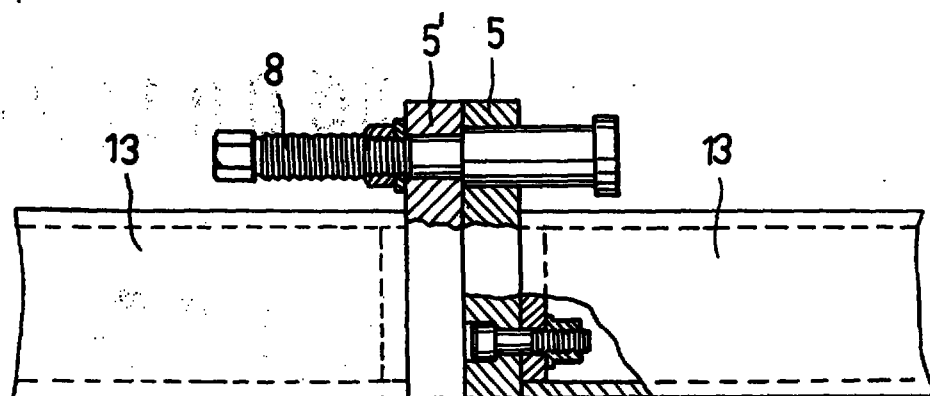


FIG. 6