Aug. 27, 1935. C. W. MILLER 2,012,616

STEEL PANEL FORM

Filed Oct. 14, 1932 2 Sheets-Sheet 1

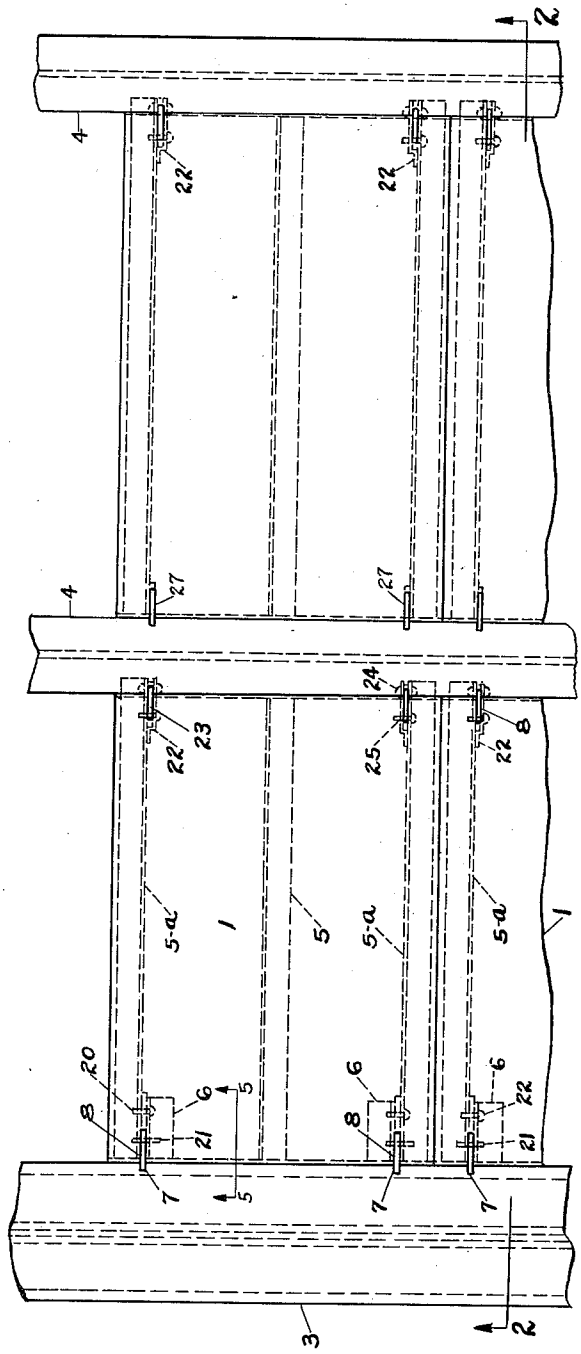


Fig. 1

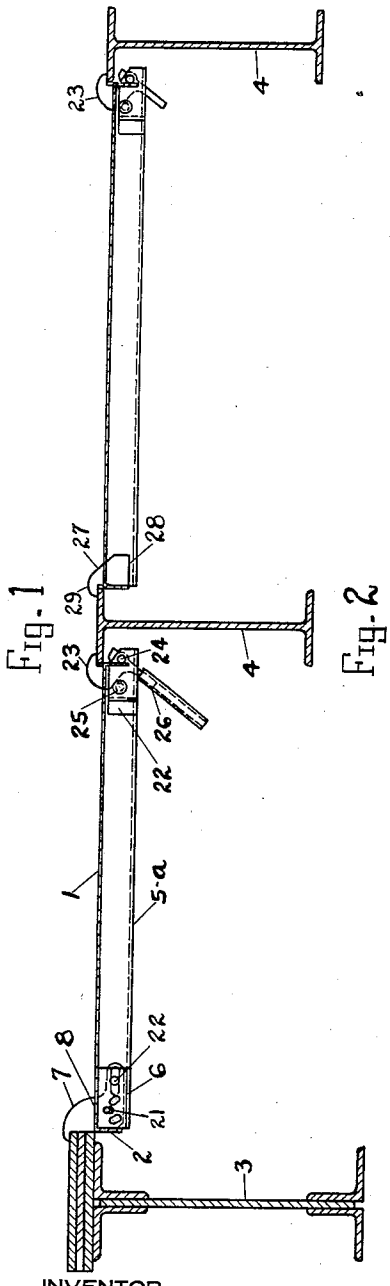


Fig. 2

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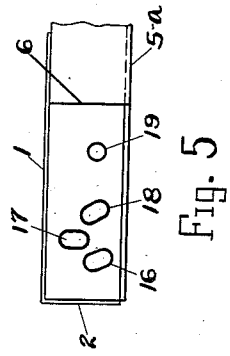


Fig. 5

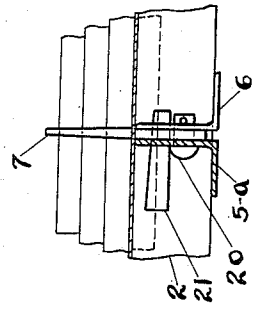


Fig. 7

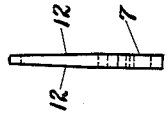


Fig. 4

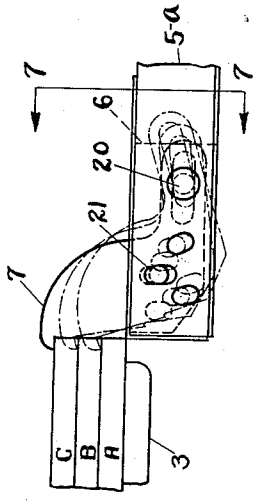


Fig. 6

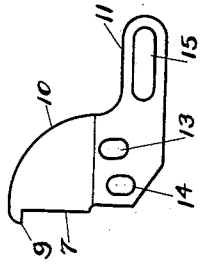


Fig. 3

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UNITED STATES PATENT OFFICE

2,012,616

STEEL PANEL FORM

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Application October 14, 1932, Serial No. 637,728

5 Claims. (Cl. 25—131.5)

This invention relates to steel panel forms used as a temporary support for concrete flooring in the construction of buildings and bridges and more particularly to that type of form used to support plastic concrete between steel beams until such time as to allow the concrete to become hardened and thereby self-supporting.

The primary object of the invention is the construction of a steel panel form having vertical adjustment in order to retain a plurality of forms in the same transverse and longitudinal plane when the surfaces of the members supporting the forms are not in the same plane.

Another object of the invention is the novel construction of a panel form and its component parts in order that it may be readily adjusted and stripped from the concrete after said concrete has set and become self-supporting.

Other objects will become apparent to those skilled in the art, from the accompanying drawings which form a part of the present description; in which

Fig. 1 shows in plan the supporting beams for the flooring of a bridge with the improved panel forms shown in position, one of the supporting beams having a number of strengthening cover plates mounted thereon.

Fig. 2 is a sectional view taken along line 2—2 of Fig. 1.

Fig. 3 is a side elevation of the latch which permits vertical adjustment of the panel form.

Fig. 4 is an end elevation of the latch shown in Fig. 3.

Fig. 5 is a sectional view taken along line 5—5 of Fig. 1 showing the arrangement of holes in the panel form reinforcements.

Fig. 6 shows the adjustable latch in various positions to accommodate the differences in height of the supporting beams due to the presence or absence of cover plates.

Fig. 7 is a view taken along line 7—7 of Fig. 6 and shows the latch secured in position.

Referring now in detail to the drawings where like reference characters refer to like parts, reference characters 3 and 4 indicate spaced longitudinal floor beams upon which the forms are being supported. Some of the supporting beams such as at 3 usually have strengthening plates of various thickness secured to the top thereof and in order to maintain the desired slope of floor or ceiling the vertical supports for the panels at such members must be adjustable or else a large number of different sized supports must be used. The preferred construction of panel form comprises a top plate 1, having depending stiffening flanges 2 at the end adjacent the beams so as to close the openings between the longitudinal supporting beam members 3 and 4. As the forms abut each other along two sides no flanges are usually employed but transverse angular reinforcing members 5 and 5a are secured by spot welding, or any other desirable method, to the underside of the top plate 1. The one end of the reinforcing member 5a, employing a vertical adjusting latch, preferably terminates within the limits of the depending flange 2 and the opposite end extends through the depending flange 2 at the adjacent side of the top plate 1.

Adjacent the extremities of the reinforcements 5a employing the vertically adjustable latch are clip angles 6 secured to the top plate 1 in the same manner that the reinforcing angles 5 and 5a are secured. The spacing of clip angles 6 from the reinforcement 5a forms a sleeve for the free passage of the latch 7 therebetween, and also acts as an anchoring means for the latch. Apertures 8 are placed in the top plate in the same vertical plane as the sleeved opening between the clip angle 6 and the reinforcing member 5a for the purpose of allowing a portion of the latch member 7 to pass therethrough and engage with the supporting longitudinal beam member 3.

The vertical adjustability of the form lies in the novel construction of the latch 7 in combination with the angular transverse reinforcing member 5a and clip 6 as will be noted from Figs. 3, 5, and 6. The latch 7 comprises a lip portion 9, body portion 10 and tail member 11. The portion of the body 10 that projects through the aperture of the panel form is shaped as a quadrant, with the radius point below the top face of the form to allow the latch to strip from the concrete freely. This action is also aided considerably by the tapering of side 12—12 (Fig. 4). Two substantially parallel, oblong openings 13 and 14 are placed in the body portion of the latch within the limits of the form and a slot 15 in the tail portion 11 is located transversely to the openings 13 and 14.

Oblong openings 16, 17, and 18 are so arranged in the transverse reinforcing member 5a and the adjacent clip angle 6 so as to coincide with the holes 13 and 14 in the latch when the latch is in the different positions to engage the top cover plates. Openings 19 in the reinforcing member 5a and clip angle 6 are spaced apart from the group of oblong openings 16, 17 and 18 so as to be in alignment with the slot 15 of latch 7.

The vertical adjustment of the steel panel form is accomplished in the following manner. It will be noted from Fig. 6 that the cover plates on

the supporting beam 3 are designated as A, B, and C and that the latch 7 is shown in full lines engaging cover plate C. The latch 7 is shown in dot and dash lines engaging the cover plate B and A respectively. To maintain the form in position a pivotal pin 20 is inserted through the openings 19 of the reinforcement 5a and clip 6, and the slot 15 in the latch 7. Opening 13 is then placed to coincide with openings 17 of the angular reinforcement 5a and clip 6 and a tapered drift pin 21 is driven into these aligned openings. The drift pin 21 engaging the oblong openings accomplishes the slight adjustment of the panel form frequently found necessary due to the variations in thickness of the individual cover plates.

If the cover plate C is absent and the lip portion 9 of the latch 7 engages with cover plates B to support the panel form, opening 14 of the latch 7 is placed in alignment with opening 16 of reinforcement 5 and clip 6, the drift pin is then inserted therein until the form is in the desired vertical position. To engage the cover plate A due to the absence of cover plates C and B, hole 13 of the latch 7 is aligned with openings 18 of angular reinforcement 5a and clip angle 6 and the drift pin 21 is inserted into the aligned openings until the desired position of the form is obtained.

On the opposite side of the panel form, a somewhat similar latch is employed. Due to the usual absence of cover plates on the longitudinal supporting beam 4, there need not be any adjustibility features embodied in this latch. The bar 22, a portion of which is secured to reinforcement 5a, is Z-shaped to allow the latch 23 to pass freely between bar 22 and the transverse reinforcement 5a. The hook-shaped latch 23 is pivotally mounted between the opening of bar 22 and reinforcement 5a adjacent their outer edge by pin 24. Bolt 25 is inserted through openings in the bar 22 and reinforcement 5a to retain the latch in locked position.

When it is desired to strip the panel forms from the concrete, the pin 25 is removed and the handle 26 of the latch 23 is rotated in a counter-clockwise direction about the pin 24, thereby freeing the hook portion of the latch 23 from the supporting surface of beam 4. With this release effected, the panel form will then travel in a clockwise direction until the lip 9 of latch 7 is free from the top of the supporting cover plate on beam 3.

In places where cover plates are used on the longitudinal beams on both sides of the panel forms the improved latch may also be employed on both ends of the reinforcement 5a. If all the latches in the panel form are similar to latch 7 the panel form may be readily stripped from the concrete by removing the drift pins 21 which will allow the panel form to be suspended away from the concrete and by swinging the form to the right the latch on the right may be released from the supporting beams and the latches on the left are released by allowing the form to swing in a clockwise direction.

Where panel forms are supported by beams that employ no cover plates, as shown in Fig. 2, the forms differ only in the manner of suspension in that the latch 27 is substituted for the latch 7 and the clip angle 6 is omitted. The latch 27 comprises a body portion 28 which is secured to and adjacent the extremity of reinforcement 5a and a hook portion 29. The hook portion 29 which passes through an aperture in the top plate 1 is shaped as a quadrant having a lip portion engaging the top surface of the supporting beam 4. As there are no cover plates employed to strengthen the beam this latch requires no vertical adjustment features and can be permanently secured to the reinforcing angular member 5a. A panel form of this type may be stripped from the concrete by the same method employed to strip the panel form using the vertically adjusted latch 7.

It will be observed that the number of latches employed to support the panel form may be changed as it was so shown in the drawings and described in the specification, merely as a means of exemplification. It will also be readily apparent to those skilled in the art that the number of openings in the body portion of latch 7 may be changed to suit the particular problem confronted without deviating from the scope of the appended claims.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

1. In a support for concrete flooring, in combination, spaced longitudinal beams having their top surfaces in different horizontal planes, a top plate bridging the space between the beams having apertures adjacent the outer edge thereof, angular members secured to the underside of the top plate, angular clips secured to the top plate adjacent the ends of said angular members, adjustable latches between the angular members and clips having a portion extending through said apertures adapted to engage the longitudinal beams, said latches having a plurality of elongated openings therein and a slot, and means extending through the angular members, and clips engaging the elongated openings and slot thereby affording vertical adjustment of the top plate.

2. In a support for concrete flooring, in combination, spaced longitudinal beams having their top surfaces in different horizontal planes, a form comprising a top plate bridging the space between the beams and having apertures adjacent the outer edges thereof, angular members secured to the underside of the top plate, angular clips secured to the top plate adjacent the ends of said angular members, and latches mounted between the angular members and clips extending through said apertures and adapted to engage said beams, said latches having a plurality of elongated openings and a slot, said elongated openings affording the vertical adjustment of the top plate and said slot engaging a bolt for anchoring the latch within the form.

3. In a support for concrete flooring, in combination, spaced longitudinal beams having their top surfaces in different horizontal planes, and a panel form comprising a top plate having apertures adjacent the outer edges thereof, angular members secured to the underside of said top plate, angular clips secured to the top plate adjacent the ends of said angular members, vertically adjustable latches mounted between the angular members and clips having a portion extending through said apertures and adapted to engage said longitudinal beams, said latches having a plurality of elongated openings in different transverse planes, and a slot, said elongated openings affording the vertical adjustment of the form and said slot engaging a bolt for anchoring the latch within the form.

4. In a support for concrete flooring, in combination, spaced longitudinal beams having their top surfaces in different horizontal planes and

a panel form comprising a top plate bridging the space between the beams and having apertures adjacent the outer edges thereof, angular members secured to the underside of said top plate, angular clips secured to the top plate adjacent the ends of said angular members forming a sleeve for the free passage of latches, said members and clips having a plurality of elongated aligned openings therein and a bolt receiving opening spaced from said elongated openings, and latches mounted therebetween adapted for vertical adjustment and having a portion extending through said apertures and engaging said beams.

5. In a support for concrete flooring, in combination, spaced longitudinal beams having their top surfaces in different horizontal planes and a panel form comprising a top plate bridging the space between the beams and having apertures adjacent the outer edge thereof, angular members secured to the underside of the top plate, angular clips secured to the top plate adjacent the ends of said angular members, said angular members and clips having a plurality of elongated aligned openings therein and a bolt receiving opening spaced from said elongated openings, vertically adjustable latches between the angular member and clip having a portion extending through said apertures adapted to engage said beams, said latches having elongated openings adapted to be aligned with the elongated openings in the angular member and clips and a slot adapted to be aligned with the bolt receiving openings.

CARL W. MILLER.