May 14, 1968 J. W. FRISBIE 3,383,080

OVERHANG BRACKET

Filed Feb. 2, 1966

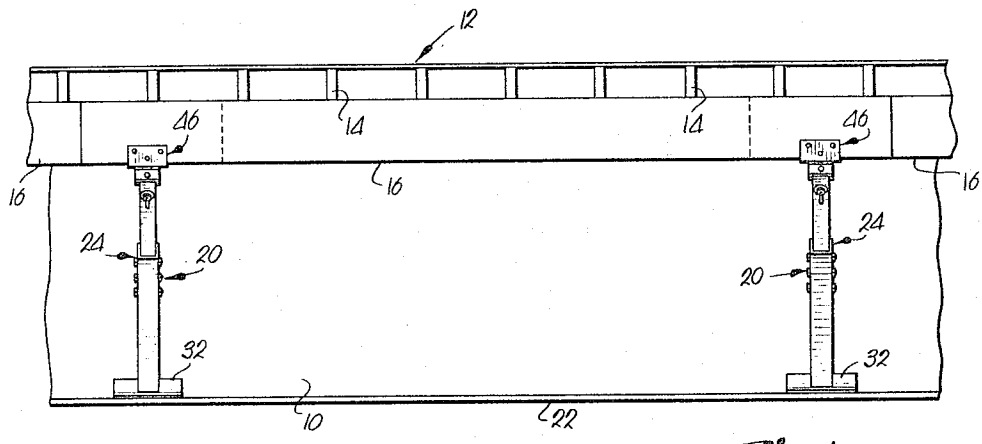

Fig. 1.

Fig. 2.

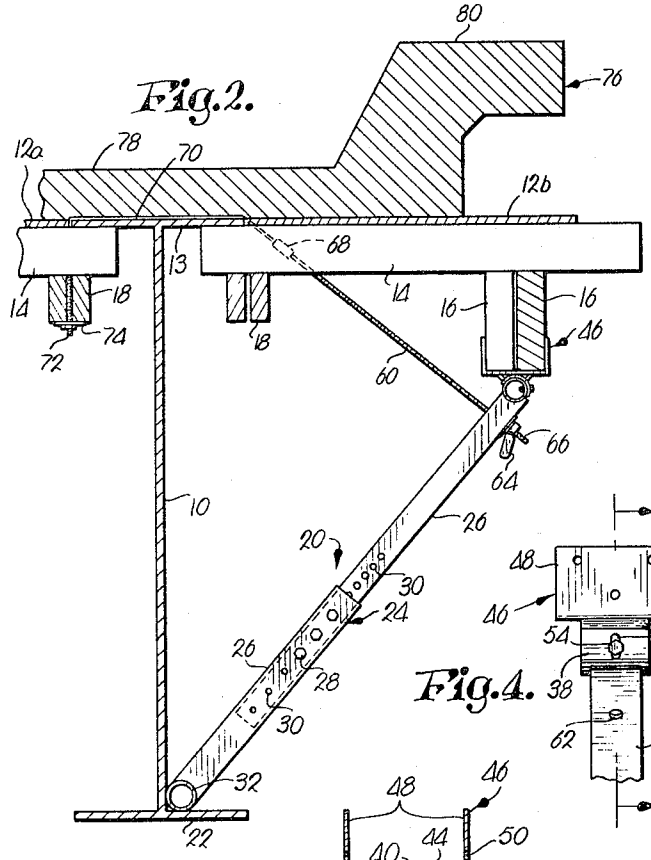

Fig. 3.

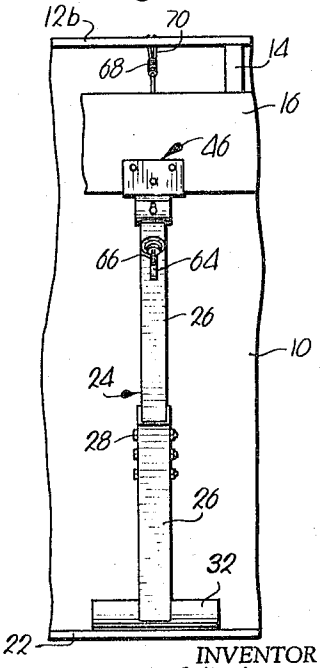

Fig. 4.

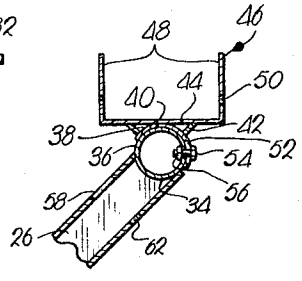

Fig. 5.

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OVERHANG BRACKET

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ABSTRACT OF THE DISCLOSURE

An adjustable bracket is employed to support a concrete form utilized in the construction of a bridge. The form defines an overhang extending laterally from the permanent support structure of the bridge and includes a beam underlying the overhang which is laterally spaced from the permanent support. The bracket extends upwardly from the support to the beam and comprises an adjustable strut formed by a pair of relatively telescoped tubes. A foot on the lower end of the strut bears against the support, and an inverted channel at the upper end of the strut forms a seat which receives the beam. A pivotal connection joins the seat to the strut and permits the base of the channel to be disposed in a level attitude so that the base will underlie the strut and be flush thereagainst. The pivotal connection is locked when the base is properly oriented. The bracket is removed after the concrete has set and may be subsequently reused with other forms, the telescoping strut and the pivotal connection permitting the bracket to be adjusted to a wide variety of vertical and horizontal dimensions.

This invention relates to an adjustable bracket for use in supporting concrete forms employed in the construction of buildings or bridges.

In the construction art a building or bridge design may provide for an overhang, such as a walkway and railing ledge for a bridge, which is to be formed from poured concrete. This necessitates that a temporary form be constructed which is sufficiently stable to support the concrete, and yet is readily removable after the concrete sets.

In bridge construction, for example, where a horizontally extending I-beam is utilized as a primary support for a concrete roadway, the form is frequently fabricated from transverse joists and longitudinal wooden beams which impart rigidity to the floor of the form. The floor overlies the primary support and must necessarily project laterally outwardly therefrom if an overhang is to be poured. The additional support required for the overhanging section of the form floor is provided by brackets which extend between the primary support and the beams which underlie the overhanging section.Manifestly, if the bracket is to be adaptable for repeated use in a number of projects, it must be capable of adjustment in a manner to compensate for varying lateral distances between the beams and the primary support, and different vertical disances between the form floor and underlying support structure upon which the foot of the bracket rests.

It is, therefore, the primary object of this invention to provide a bracket of the type discussed above which is adjustable such that a beam-engaging seat carried by the bracket may be properly oriented to receive the beam regardless of the angularity of the bracket, which may vary due to variations in the aforesaid lateral and vertical dimensions of the structure.

As a corollary to the foregoing object, it is another important aim of this invention to provide such a bracket wherein the beam-engaging seat is pivotally mounted on the normally uppermost end of the strut portion of the bracket, thereby enabling the seat to be leveled to properly receive the beam notwithstanding variations in the angularity of the strut.

In the drawing:

FIGURE 1 is a fragmentary, side elevational view of a bridge structure under construction;

FIG. 2 is a fragmentary, transverse sectional view of the structure shown in FIG. 1, and illustrating a slab of poured concrete of the finished bridge;

FIG. 3 is an enlarged elevational illustration of one of the brackets shown in FIG. 1;

FIG. 4 is a detail of the upper end of the bracket; and

FIG. 5 is a sectional view taken along line 5—5 of FIG. 4.

The numeral **10** designates an I-beam support which forms a part of a bridge structure shown fragmentarily in the drawing. A concrete form is shown supported adjacent the upper flange **13** of support **10** and includes a floor **12**, a plurality of transverse joists **14**, and a number of lapped, longitudinal beams **16**. As is clear in FIG. 2, floor **12** is divided into two sections **12***a* and **12***b* which are disposed on opposite sides of the upper flange **13** of support **10**. Two rows of joists **14** are shown underlying respective sections **12***a* and **12***b*. Beams **16** extend beneath the joists **14** which support the outer or overhang section **12***b* of the floor, a number of longitudinal joists **18** being utilized as additional support to stabilize the transverse joists **14**.

Joists **14** and **18** may comprise 2 x 6 lumber stock, double 2 x 6's being employed to form the longitudinal joists **18**. Each beam **16** may comprise 3 x 12 lumber stock, attention being directed to the utilization of brackets **20** which extend between the lapped portions of beams **16** and the base flange **22** of support **10**.

Each bracket **20** comprises an elongated, longitudinally extensible and retractable strut **24** having a pair of relatively telescoped tubes **26** secured together by three crossbolts **28** extending through three of a series of holes **30** in tubes **26**. Tubes **26** are formed from square structural tubing, the lower end of the normally lowermost tube **26** being provided with a transverse tube section **32** which presents a foot that rests against and is supported by the lower flange **22** of support **10**.

A tubular, transversely circular element **34** is rigid with the upper end of the normally uppermost tube **26** and is disposed with its longitudinal axis extending transversely of the longitudinal axis of strut **24**. Element **34** presents a convex, upwardly facing bearing surface **36** which is received by a socket member **38** in the form of an arcuate plate having a concave, downwardly facing surface **40** which slidably engages surface **36**. A pair of braces **42** secure member **38** to the base **44** of an elongated, transversely channel-shaped seat **46** having a pair of spaced, upright legs **48** integral with the base **44**. Seat **46** receives the lapped beams **16** and may be held against movement relative to the beams during installation of the bracket by nails driven through holes **50** in legs **48**.

Member **38** has an elongated slot **52** therein which receives a threaded bolt or fastener **54** and provides clearance for the fastener to permit member **38** to be adjustably positioned on element **34** within limits defined by slot **52**. Element **34** is apertured to receive the shank of fastener **54**, a nut **56** being welded to the internal surface of element **34** in alignment with the fastener receiving aperture.

A clearance opening **58** adjacent the upper end of the upper tube **26** permits the insertion of a threaded rod **60** into a hole **62** on the opposite side of the tube. A wing nut **64** is threaded onto the projecting extremity **66** of rod **60**, the opposite extremity **68** thereof being connected to a tie wire **70**. A bolt **72** extends upwardly between the two sections of the longitudinal joist **18** on the opposite side of support **10** from rod **60**, bolt **72** being connected to tie wire **70** and held against movement under the pull

of the wire by a washer **74**. Wire **70** extends over flange **13** and between the edges of the flange and floor sections **12***a* and **12***b*, as is clear in FIG. 2.

For purposes of illustration, FIG. 2 shows a slab **76** of concrete resting on floor sections **12***a* and **12***b* and flange **13**, and formed in a manner to provide a walkway **78** and a railing ledge **80**. In the utilization of the instant invention and the components of the form associated therewith, it will be appreciated that such components are removed from the bridge structure after the concrete has set, leaving slab **76** supported by I-beam support **10** and the other structural members of the bridge which are not revealed in the fragmentary i lustrations.

The brackets of the instant invention are positioned in supporting relationship to beams **16** after the form is constructed and rods **60** and tie wires **70** are in place. The telescoping tubes **26** permit the length of strut **24** to be adjusted such that seat **46** will reach the lapped beams **16** when foot **32** is in place against flange **22**. By loosening fastener **54**, seat **46** may be pivoted about the axis of element **34** until the base **44** of the seat is disposed in a level attitude to properly receive beams **16**. Tightening of fastener **54** then rigidly secures the seat to the strut, and rod **60** may be inserted through the upper tube **26** and held in place by wing nut **64**. The weight of the overhang to be formed when the concrete is poured, therefore, is supported by strut **24** and supplemented by rod **60** to prevent drooping of the overhanging structure.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a structure having an upwardly extending support provided with a lateral flange and an overhang spaced above the flange, and having a beam underlying the overhang and laterally spaced from the support, the combination with said support and said beam of:

an elongated, upwardly extending, longitudinally extensible and retractable strut having an upper and a lower end,

said lower end being provided with a foot bearing against the support and resting on said flange;

a seat receiving said beam and having a flat base;

a pivotal connection on the upper end of said strut mounting said seat thereon for swinging movement about an axis extending in substantial parallelism with said beam, whereby to permit movement of the seat to a position where the base thereof is in underlying supporting relationship to said beam; and

means engageable with said connection for locking the seat in said position.

2. The invention of claim **1**,

said connection including an element rigid with said strut and having an outwardly facing, convex bearing surface, and a socket member rigid with said seat and receiving said surface,

said locking means including a fastener engageable with said element and said member.

3. The invention of claim **2**,

said member having a clearance slot therein for said fastener,

said element having means threadedly receiving said fastener with the latter extending through said slot whereby, upon disengagement of the fastener and the member, the latter may be rotated on the element between limits defined by said slot.

4. The invention of claim **2**,

said element being tubular in configuration and having a longitudinal axis extending transversely of said strut and defining the axis of swinging movement of the seat,

said seat being of elongated, transversely channel-shaped configuration presenting said base and having a pair of spaced, normally upright legs,

said member comprising an arcuate plate disposed beneath said base and having a normally downwardly facing, concave surface slidably engaging the convex surface of said element.

5. The invention of claim **2**,

said strut including a pair of relatively telescoped tubes, one of said tubes presenting said upper end; and

an elongated rod having a pair of opposed extremities, one of said extremities being coupled with said one tube with the rod extending laterally outwardly therefrom; and

a tie wire connected to the other of said extremities and secured to said structure.

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