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JACKS FOR USE WITH FORMS FOR CONCRETE DECKS FOR BRIDGES

Filed June 14, 1963

2 Sheets-Sheet 1

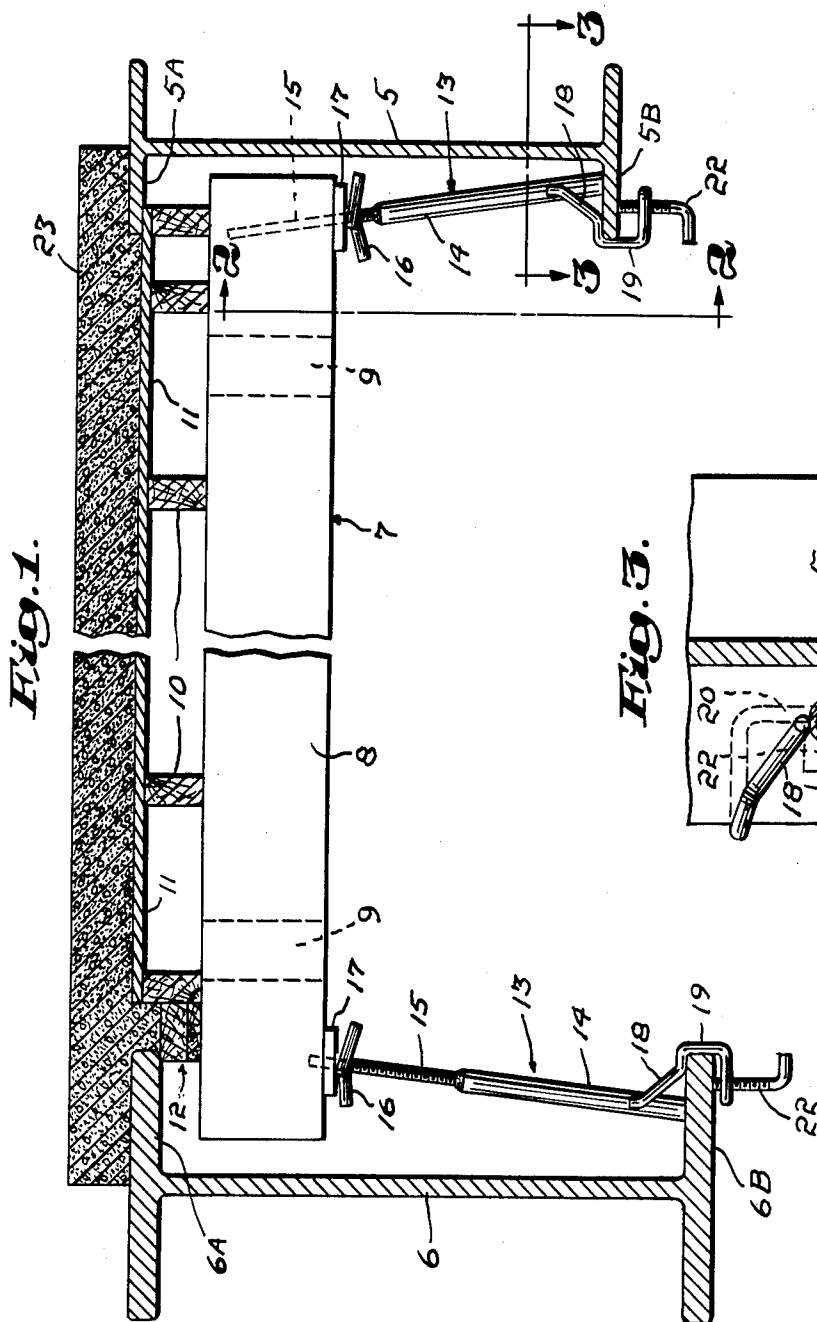


Fig. 1.

Fig. 3.

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Fig. 2.

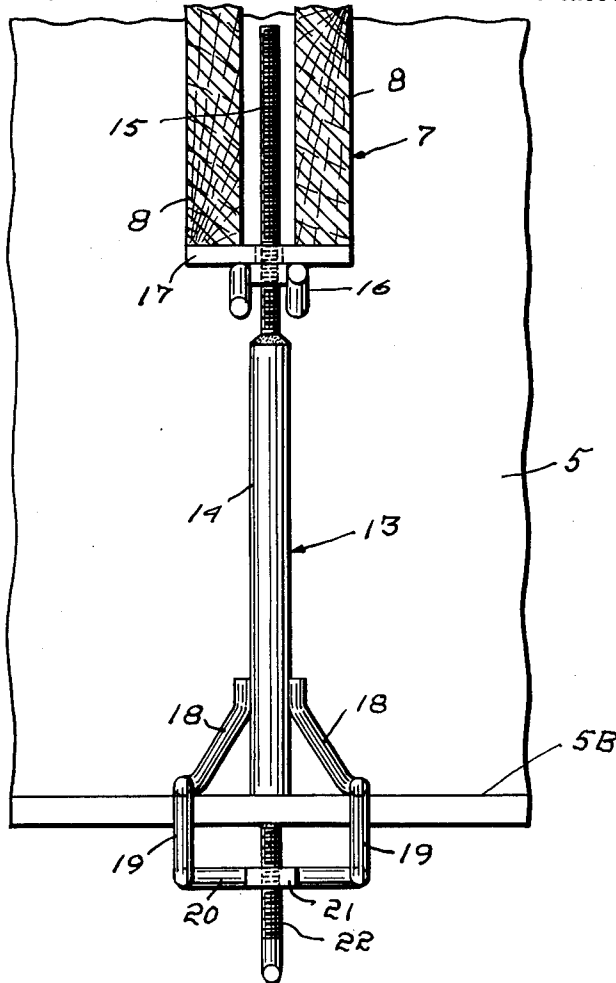
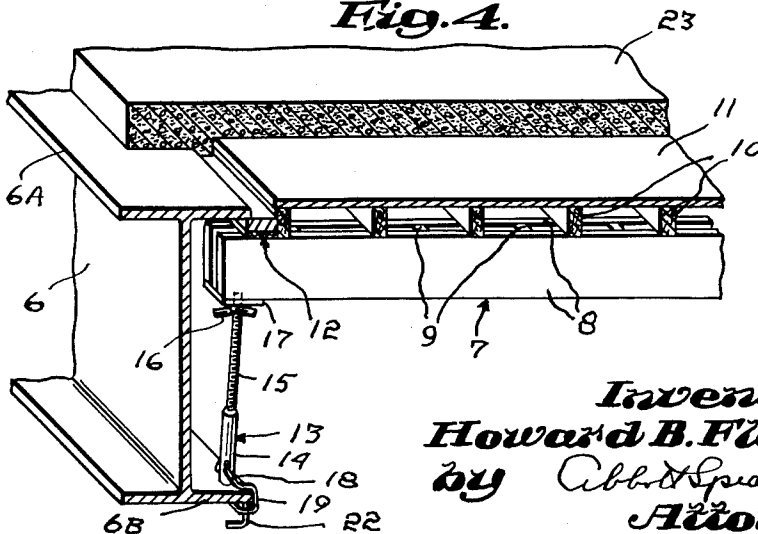


Fig. 4.



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7 Claims. (Cl. 254-100)

The present invention relates to jacks for use in supporting concrete deck form structures in desired relation to I beams.

In providing bridges with concrete decks, it is necessary to install forms between I beams. As these forms must be in a predetermined relationship to the upper flanges of the beams, it is the practice either to hang the forms from the upper flanges or to use jacks to establish that relationship. The former practice has the objectionable feature that hangers became permanently embedded in the deck. The latter practice required that the jacks be blocked against slipping, if they were seated on the bottom flanges and if the jacks engageable with the bottom flanges, were extended downwardly through the form structure into engagement with the lower beam flanges, holes were left in the deck that had to be filled and frequently the jacks could not be removed without freeing them from the underside.

The principal objective of the present invention is to provide jacks that can be installed and removed under the form to provide economies in material and in the labor involved in installing and removing the forms. This objective is attained by providing an extensible unit having an element engageable with the form structure and carried by a flange-straddling support having a vertically adjustable locking device engageable with the undersurface of the bottom beam flange, the unit, when the jack is in place, being outwardly and upwardly inclined. In practice, the jack is in the form of a tripod with one foot being the lower part of another element of the unit and other feet being braces to which the flange straddling support is connected.

Another objective of the invention is to provide such a jack with the locking device being so positioned as to engage the undersurface of the lower beam flange within the triangle defined by the portions of the tripod engageable with the upper surface thereof to ensure maximum security of the jack.

Yet another objective of the invention is to provide the flange straddling support in the form of U-shaped extensions of the bracing arms with their underlying portions being interconnected enabling the jacks to be of adequate strength but produced at low cost.

In the accompanying drawings, there is shown an illustrative embodiment of the invention from which these and other of its objectives, novel features and advantages will be readily apparent.

In the drawings:

FIGURE 1 is a fragmentary cross section of a pair of I beams with a concrete deck and form supported by jacks in accordance with the invention,

FIGURE 2 is a section taken approximately along the indicated lines 2-2 of FIGURE 1,

FIGURE 3 is a section taken approximately along the indicated lines 3-3 of FIGURE 1,

FIGURE 4 is a fragmentary and partly sectioned perspective view of the deck and the deck form, with our jack also being shown.

In the drawings, a pair of parallel I beams 5 and 6 are shown. These are identical except for size and in the illustrative embodiment the upper flange 5A of the smaller beam 5 lies in a plane slightly above that of the upper flange 6A of the larger beam 6.

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Below the upper beam flanges, there are a series of transversely disposed bunks, generally indicated at 7 and comprising a pair of plates 8 joined to spacers 9. The bunks 7 are spaced apart and support joists 10 on which support plywood panels 11 are laid. To illustrate two different practices, a plywood panel 11 is shown as spaced short of a flange 6A in the plane thereof and that blocking 12 extending under that flange completes the form with respect to that beam while at the other side, a panel 11 underlies a beam flange 5A to complete the form and is held in engagement therewith by a joist 10.

The form as thus supported by the lower beam flanges 5B and 6B is held in place by jacks. These are generally indicated at 13 and there is one at each end of each bunk 7. Each jack 13 is shown as having an extensible unit including a tubular lower part 14 within which one end of a threaded rod 15 is welded. The rod 15 receives a wing nut 16 and is entrant within the associated bunk 7, passing freely through a washer 17 seated on the wing nut 16. The unit can, accordingly, be adjusted for use with either beam as will be apparent from FIGURE 1.

It will be noted that the jack is in the form of a tripod with one foot being the part 14 of the extensible unit and the other two feet being braces 18, each inclined downwardly away from the other but both in the same plane, this plane and the extensible unit being inclined toward each other to ensure that there is always room to enable the wing nuts to be turned.

Each brace 18 includes a U-shaped extension 19 disposed to straddle the lower beam flanges with the underlying portions interconnected by a central portion 20 including a boss 21 through which is threaded a locking screw 22 engageable with the undersurface of the appropriate lower beam flange within the triangle defined by the flange engaging portions of the tripod as will be apparent from FIGURE 3.

From the foregoing it will be apparent that jacks in accordance with the invention are well adapted for use in supporting concrete deck forms as they are strong but light in weight and are easily locked to the lower beam flange to ensure secure support for the form and the concrete load thereon, the deck 23.

I claim:

1. A jack for attachment to the lower flange of an I beam for positioning concrete deck form structure in desired relation to the upper flange thereof, said jack comprising an extensible unit including a structure engaging element, a U-shaped support to straddle the edge of the lower beam flange that underlies said structure, said unit being connected to that part of said support that overlies said lower beam flange and being upwardly and outwardly inclined relative thereto and with its lower extremity inwardly of the straddled edge thereof, said support including bracing means connected to said unit, and a vertically adjustable locking device connected to the part of said support that underlies said lower beam flange for engagement with the undersurface thereof.

2. A jack for attachment to the lower flange of an I beam for positioning concrete deck form structure in desired relation to the upper flange thereof, said jack comprising an extensible unit including a structure engaging element, a tripod, one foot of said tripod being the lower part of another element of said unit, the other feet being braces and engageable with the upper surface of said lower flange adjacent the edge thereof that underlies said structure, said first named foot being engageable with said surface between said brace legs and the web of said beam, a vertically adjustable locking device, and a flange straddling connection between said bracing feet and said locking device and positioning said locking device for engagement with the undersurface of said lower flange.

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3. A jack for attachment to the lower flange of an I beam for positioning concrete deck form structure in desired relation to the upper flange thereof, said jack comprising an extensible unit including a structure engaging element, a tripod, one foot of said tripod being the lower part of another element of said unit, the other feet being braces and engageable with the upper surface of said lower flange adjacent the edge thereof that underlies said structure, said first named foot being engageable with said surface between said brace legs and the web of said beam, a vertically adjustable locking device, and a flange straddling connection between said bracing feet and said locking device and positioning said locking device for engagement with the undersurface of said lower flange within the triangle defined by the portions of said tripod engageable with the upper surface thereof.

4. A jack for attachment to the lower flange of an I beam for positioning concrete deck form structures in desired relation to the upper flange thereof, said jack comprising an extensible unit including a structure engaging element, a tripod, one foot of said tripod being the lower part of another element of said unit, the other feet being braces and engageable with the upper surface of said lower flange adjacent the edge thereof that underlies said structure, said other feet being inclined downwardly and away from each other but lying in the same plane, said plane and said unit being inclined towards each other, each of said bracing feet including a U-shaped extension disposed for straddling said lower flange, a vertically adjustable locking device, the inner ends of the lower portions of said extensions being interconnected and supporting said device for engagement with the undersurface of said flange.

5. A jack for attachment to the lower flange of an I beam for positioning concrete deck form structures in desired relation to the upper flange thereof, said jack comprising an extensible unit including a structure engaging element, a tripod, one foot of said tripod being the lower part of another element of said unit, the other feet being braces and engageable with the upper surface of said lower flange adjacent the edge thereof that underlies said structure, said other feet being inclined downwardly and away from each other but lying in the same plane, said plane and said unit being inclined towards each other, each of said bracing feet including a U-shaped extension disposed for straddling said lower flange, a vertically adjustable locking device, the inner ends of the lower portions of said extensions being interconnected and supporting said device for engagement with the un-

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dersurface of said flange within the triangle defined by the portions of said tripod engageable with the upper surface thereof.

6. A jack for attachment to the lower flange of an I beam for positioning concrete deck form structures in desired relation to the upper flange thereof, said jack comprising an extensible unit including a structure engaging element, a tripod, one foot of said tripod being the lower part of another element of said unit, the other feet being braces and engageable with the upper surface of said lower flange adjacent the edge thereof that underlies said structure, said other feet being inclined downwardly and away from each other but lying in the same plane, said plane and said unit being inclined towards each other, each of said bracing feet including a U-shaped extension disposed for straddling said lower flanges, the upper portion of each extension being engageable with the upper surface thereof, a vertically adjustable locking device, the inner ends of the lower portions of said extensions being interconnected and supporting said device for engagement with the undersurface of said flange.

7. A jack for attachment to the lower flange of an I beam for positioning concrete deck form structures in desired relation to the upper flange thereof, said jack comprising an extensible unit including a structure engaging element, a tripod, one foot of said tripod being the lower part of another element of said unit, the other feet being braces and engageable with the upper surface of said lower flange adjacent the edge thereof that underlies said structure, said other feet being inclined downwardly and away from each other but lying in the same plane, said plane and said unit being inclined towards each other, each of said bracing feet including a U-shaped extension disposed for straddling said lower flange, the upper portion of each extension being engageable with the upper surface thereof, a vertically adjustable locking device, the inner ends of the lower portions of said extensions being interconnected and supporting said device for engagement with the undersurface of said flange within the triangle defined by the portions of said tripod engageable with the upper surface thereof.

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MILTON S. MEHR, *Examiner.*