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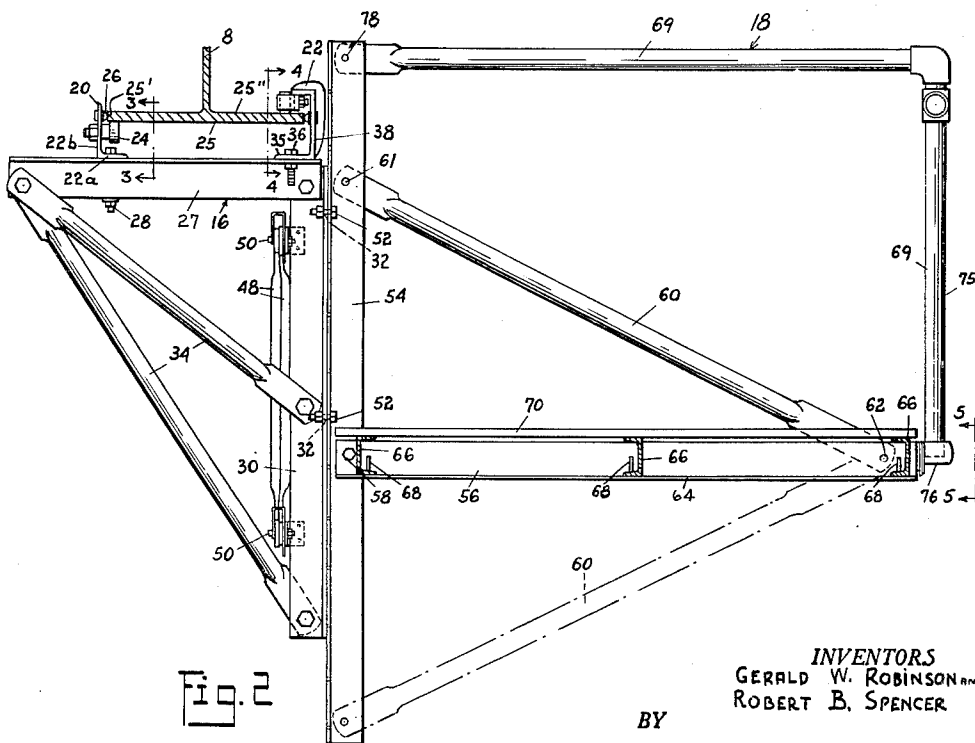
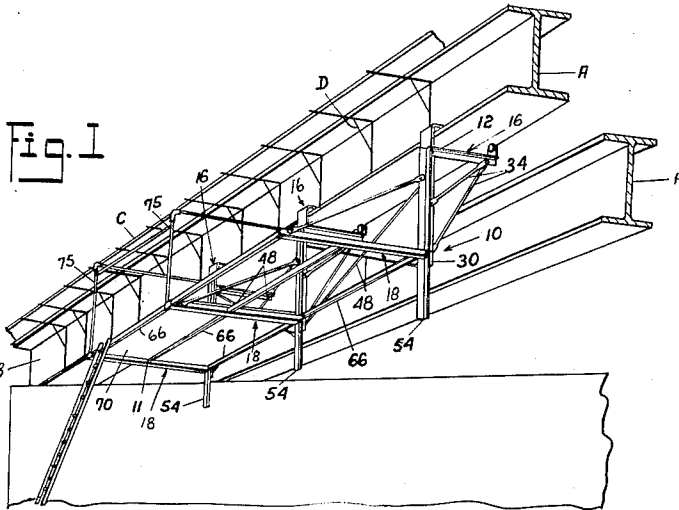
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3,066,757

TRAVELING SCAFFOLD

Filed May 9, 1961

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

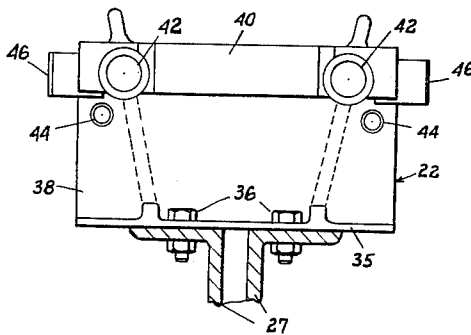


Fig. 4

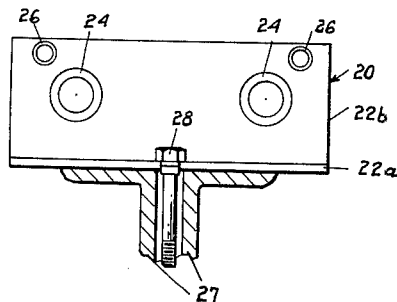


Fig. 3

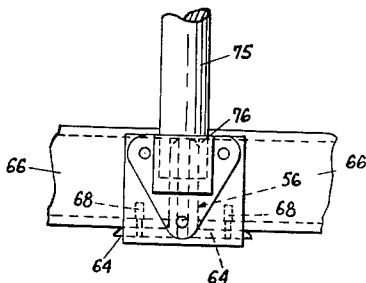


Fig. 5

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TRAVELING SCAFFOLD

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2 Claims. (Cl. 182—36)

This invention relates in general to traveling or movable scaffolds, and more particularly relates to a traveling scaffold for use with bridges and like elevated structures.

In the construction of reinforced concrete bridges and the like, the bridge is often formed of elongated parallel girders or stringers, such as I-beams, supported on more or less vertical pier constructions. The bridge deck is supported on the tops of the I-beam stringers, and often is provided with lateral overhangs of reinforced concrete, for use such as sidewalk areas on the bridge. The installation and removal of the necessary forms for producing such overhanging portions presents many problems, and after the forms are removed, it is conventionally necessary to place cement finishers in the proximity of such overhanging portions for finishing the surfaces of the exposed concrete sections. The above work problems usually necessitate the erection of a more or less stationary scaffolding from ground level which erection is costly and time consuming.

The present invention comprises a light weight, rolling scaffold of the cantilever type, which can be readily mounted for lengthwise movement on the outermost stringer on a side of the bridge construction and which provides for the convenient erection and removal of the necessary pouring forms for the aforementioned overhanging portions of the bridge deck, and which provides for effectively placing workmen, such as cement finishers, in convenient access to the exposed concrete surfaces constituting such overhanging portions.

Accordingly, an object of the invention is to provide an improved construction of rolling scaffold for bridges and the like.

Another object of the invention is to provide a scaffold of the latter type which can be readily disassembled and assembled and which can be easily moved lengthwise of the bridge in cantilever mounted fashion on an outermost flanged stringer element on a side of the bridge construction, for providing a platform utilizable in erecting and removing concrete forms for overhanging portions of the bridge deck, and for finishing the concrete surfaces of such portions.

A more specific object of the invention is to provide a rolling bridge scaffold of the above discussed type wherein the platform surface of the scaffold is adjustable in a generally vertical direction, thereby providing for expediting various work operations on the bridge by the workmen, and wherein the scaffold comprises a plurality of sections detachably connected in longitudinally aligned relation to one another, so that when the movable scaffold approaches a vertical obstruction on the bridge, as for instance one of the aforementioned pier constructions, one section of the scaffold can be dismantled and moved ahead of the obstruction, working from the non-dismantled sections, and then the following sections can be progressively dismantled working from the reassembled transferred section and moving such sections in front of the first transferred section, thereby providing for travel of the scaffold the entire length of the bridge stringer, and from one supporting pier abutment to the other irrespective of such obstructions.

Other objects and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a more or less diagrammatic, perspective view

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of a bridge construction having a scaffold of the invention mounted thereon;

FIG. 2 is an enlarged end sectional view of the scaffold construction as mounted on an I-beam stringer of a bridge;

FIG. 3 is an enlarged end view of one of the rolling brackets for detachably mounting the scaffold in movable relation on the I-beam stringer and is a view taken generally along the plane of line 3—3 of FIG. 2, looking in the direction of the arrows;

FIG. 4 is a view generally similar to that of FIG. 3, but illustrating a view of another of the rolling brackets of the scaffold, as taken generally along the plane of line 4—4 of FIG. 2, looking in the direction of the arrows;

FIG. 5 is a fragmentary, end elevational view taken generally along the plane of line 5—5 of FIG. 2, looking in the direction of the arrows, and illustrating the structure of the platform which aids in facilitating movement of the scaffold about obstructions in the lengthwise extent of the supporting bridge girder.

Referring now especially to FIG. 1, there is illustrated a bridge construction comprising a plurality of generally parallel extending stringers A supported on pier construction B. The bridge construction may include overhanging portions C which are adapted to provide sidewalk areas or the like on the bridge. The formation of such overhanging portions necessitates installation of forms D extending outwardly from the outer face of the outermost stringer 8 on a respective side of the bridge construction.

Now in accordance with the instant invention, there is provided a novel rolling scaffold 10 for mounting on the outermost stringer 8 on a side of the bridge construction, and which scaffold is movable lengthwise therealong for providing for the ready and effective installation and removal of the concrete forms D, and for finishing of the exposed faces of the concrete, after the forms have been removed, by placing workmen in close proximity to such exposed faces. Such a scaffold preferably comprises two or more sections (e.g. 11 and 12) detachably connected together so that when the scaffold approaches an obstruction in the lengthwise extent of the associated stringer, such as for instance a pier construction, the rearwardmost section can be readily dismantled from the other section or sections, and working from the non-dismantled section, the dismantled section can be reassembled ahead of the obstruction, and then progressively the other sections can be disassembled and placed in reassembled condition in front of the first transferred section, whereby providing for travel of the scaffold the entire length of a bridge girder, and from one pier abutment to the other. The latter procedure will hereinafter be described in greater detail.

The scaffold construction comprises a plurality of longitudinally spaced base or hanger portions 16 on which is mounted in cantilever fashion a respective platform supporting portion 18 of the scaffold. Each hanger portion 16 comprises transversely spaced hanger bracket members 20 and 22. Referring in particular to FIG. 3 bracket member 20, in the embodiment illustrated, is of L-shape in end elevation comprising a base section 22a and a generally elongated upstanding section 22b. Upstanding section 22b has a plurality of longitudinally spaced roller members 24 rotatably mounted thereon and adapted for rolling engagement with the underside of the flange 25 of the I-beam stringer 8. Disposed above and in offset relation with respect to rollers 24 are friction bearing means or hardened balls 26, rotatably mounted in upstanding section 22b and adapted for engagement with the confronting side surface 25' of flange 25. Roller members 24 are preferably mounted in anti-fric-

tion bearings, such as needle bearings, for ease of rotation. Bracket member 20 may be attached to the top surface of horizontal arm 27 of the hanger portion 16, as by means of nut and bolt assembly 28 and with such bracket being preferably adjustably attached to such top surface as by means of an elongated slot in the surface, receiving therethrough the bolt and nut assembly 28, for adjusting the position of hanger bracket 20 with respect to hanger bracket 22, and thereby providing for various widths of flanges on an I-beam stringer. Hanger portion 16 is also provided with a depending leg section 30, which has vertically spaced openings (e.g. 32) provided through a flange thereof, for adjusting the vertical position of the platform section 18 with respect to the hanger section 16, as will be hereinafter further discussed. Hanger section 16 also preferably includes diagonal tube brace members 34, which strengthen and rigidify the scaffold hanger portion 16.

The other hanger bracket 22 comprises a base section 35 attached to the upper surface of arm 27, as by means of bolt and nut assemblies 36, a generally elongated upstanding section 38, and a head section 40 overhanging the base section of the respective bracket.

Mounted on head section 40 are a plurality of longitudinally spaced roller members 42, which are adapted for rolling engagement with the upper surface 25' of flange 25 of the I-beam 8. Disposed below and in offset relation with respect to rollers 42 are a plurality of longitudinally spaced friction bearing means or balls 44, which are adapted for engagement with the confronting side surface 25' of flange 25. A scraper tongue 46 is disposed outwardly of each of roller members 42, which scraper tongues are adapted to shove any concrete particles or the like, which have fallen onto the top surface 25' of flange 25, out of the way of the roller members 42, thus assuring smooth and uninterrupted movement of the roller members along the top surface of flange 25.

The hanger portions 16 may be secured together by diagonal brace members 48 (FIGS. 1 and 2), thus attaching a pair of such hanger portions together for movement as a unit on the I-beam 8. Three of such hanger portions 16 may be utilized to form the aforementioned detachable sections 11 and 12 of the rolling scaffold, with such connecting brace members 48 detachably connecting such hanger sections 16 together as by means of fastener assemblies 50, for ready detachment of such connected hanger sections 16 with respect to one another.

As aforementioned, a platform supporting section 18 is detachably secured to the leg 30 of the respective hanger section 16, as by means of nut and bolt assemblies 52. Section 18 comprises an upstanding arm element 54 having vertically aligned apertures, and a horizontal arm element 56 secured to arm 54 in cantilever fashion and as by means of fastener assemblies 58. A diagonal brace member 60 may be provided extending from upright arm 54 as at 61, to a point adjacent the outer end of horizontal arm 56, as at 62, to provide additional support for such horizontal arm. Horizontal arm 56 preferably has supporting flanges 64 (FIG. 5) extending from both sides thereof, and elongated stringers 66 extending parallel to girder 8 are supported on and detachably connected to such flanges 64, as by means of threaded bolts 68. Bolts 68 are adapted to be secured in complementary threaded openings in the respective flange 64, and hold stringers 66 in assembled position. It will be seen that flanges 64 on both sides of arm 56 of platform supporting portion 18 provide for the expeditious use of only three supporting portions 18, to form a pair of connected scaffold sections 11 and 12, and provide for the interchangeability of portions 18, whether they are used at the leading or following end of the respective scaffold section.

A railing structure 69 may be provided extending

around at least one of scaffold sections 11 and 12 for increasing the safety and security to workmen working on the movable scaffold. A workman supporting sheet 70 of plywood or some other suitable material may be mounted on the tops of stringers 66 and extending between the adjacent platform supporting portions 18.

As best illustrated in FIG. 2, section 18 can be oriented in a plurality of vertically disposed positions with respect to the respective hanger section 16 by removing the attaching bolt and nut assemblies 52 and reassembling the platform supporting portion 18 at a different vertical position. In the embodiment illustrated, there are eleven possible positions of the platform supporting portion 18 with respect to the respective hanger portion 16. When the platform supporting portion 18 is moved to the upper ones of its possible vertical positions with respect to hanger portion 16, the diagonal bracing member 60 may be shifted downwardly and attached underneath the horizontal arm 56, rather than being disposed upwardly above the horizontal arm 56 and as shown in dashed lines in FIG. 2.

If an obstruction is met in the travel of the scaffolding along the I-beam stringer 8, as for instance when the scaffold comes up to one of the pier constructions supporting the stringer, the trailing portions 16 and 18 of scaffold section 11 can be disassembled and moved ahead of the obstruction, and then the other section or sections (e.g. 12) can be disassembled and moved ahead of the transferred section, to provide for travel of the scaffold the entire length of the bridge stringer, and from one supporting pier abutment to the other. For instance, the platform 70 on the section 11 may be placed on section 12 to permit removal of fasteners 68 from the central one of portions 18, and the diagonal brace members 48 of section 11 may be detached, thereby permitting drawing of the following end portions 16 and 18 of section 11 toward section 12. Disassembly of the stringers 66 from the following portion 18 of section 11 can then be readily accomplished working from section 12. Following end portions 16 and 18 of section 11 may then be readily detached from girder 8 by rotating such portions in a counterclockwise direction, with respect to FIG. 2, whereupon, the friction balls 26 are snapped out of engaging relation with surface 25' of flange 25. The portions 16 and 18 are preferably formed of high strength, but light weight aluminum or other suitable light weight material, which facilitates their handling by the workmen. The disassembled scaffold portions 16 and 18 may then be reassembled on the girder 8 ahead of the obstruction, by merely placing the rollers 42 of hanger bracket 22, on the flange 25, and rotating the portions 16 and 18 in a clockwise direction (with respect to FIG. 2) whereupon the friction balls 26 snap into engagement with surface 25' of the girder and the rollers 24 engage the underside of flange 25, and thus once more securely mount portion 16 and associated portion 18 in depending relation from girder 8. Stringers 66 may then be secured to flange 64 on horizontal arm 56 and the platform board 70 placed thereon to form a scaffold section "bridging" the obstruction. The aforementioned central one of portions 18 (which now represents the following end of the scaffold construction) may then be disassembled in a like manner and moved ahead of the first transferred section and then reassembled, and so on until all sections of the scaffold have been transferred ahead of the obstruction. The lightness of weight, ready detachability of the bracing members 48 and platform supporting stringers 66, and the ready detachability and attachability of the hanger bracket members 20 and 22 from and to the girder 8, provides for the expeditious movement of the scaffold sections around an obstruction. Also, as may be best seen from FIG. 5, the railing posts 75 merely set in brackets 76 attached to platform portion 18, and are detachably connected as at 78 to the upright arms 54, for ease of assembly and disassembly of such railing structure.

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From the foregoing discussion and accompanying drawings, it will be seen that the invention provides a lightweight rolling scaffold which can be readily disassembled and assembled and which can be easily moved lengthwise of the bridge in cantilever mounted fashion on an outermost flange stringer element on a side of the bridge construction, for providing a platform utilizable in erecting and removing concrete forms for overhanging portions of the bridge deck and for finishing the concrete surfaces of such portions.

The terms and expressions which have been utilized are used as terms of description and not of limitation and there is no intention in the use of such terms and expressions of excluding any equivalents of any of the features shown or described, or portions thereof, but it is recognized that various modifications are possible within the scope of the invention claimed.

We claim:

1. A traveling scaffold of light material, such as aluminum, for bridges and like elevated structure, wherein said structure includes a lengthwise extending girder, such as an I-beam, having an exposed bottom flange thereon, said scaffold comprising a hanger section including vertically and transversely spaced roller means for mounting said hanger section in suspended movable relation on the girder flange, and a platform supporting section detachably secured to said hanger section in outward laterally disposed cantilever relationship therewith, said hanger section comprising a plurality of lengthwise spaced hanger frames of inverted and reversed L-shaped configuration and bracing means extending between and detachably connected to said frames to couple the latter as a unit, each of said hanger frames including a pair of transversely spaced hanger brackets projecting upwardly therefrom, said brackets mounting said roller means in anti-friction bearings thereon, the roller means on one of said brackets being adapted for rolling engagement with the upper sur-

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face of the girder flange, the roller means on the other of the brackets being adapted for rolling engagement with the undersurface of the girder flange, and friction ball means mounted in said brackets in vertically oriented relationship to the respective roller means, said ball means in said one bracket being disposed below the associated roller means, and said ball means in said other bracket being disposed above the associated roller means, said ball means being adapted for engagement with the respective confronting side surface of the girder flange for detachably coupling in snap fastening relation the scaffold to the girder flange, said platform section comprising a plurality of frames, each of one of which is detachably connected to a respective one of said hange frames, each of said platform frames comprising a generally horizontally disposed laterally extending arm including flange means on opposite sides of said arm, and lengthwise extending between and being detachably secured at opposite ends to the respective of said flange means, said stringer means being adapted to mount a workman supporting platform on the top surface thereof.

2. A traveling scaffold in accordance with claim 1, wherein said platform section and said hanger section includes means for adjusting the vertical position of said platform section with respect to said hanger section.

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