Oct. 13, 1970 W. A. JENNINGS 3,533,592

SHORING STRUCTURE FOR CONCRETE FORMS

Filed May 3, 1967 3 Sheets-Sheet 1

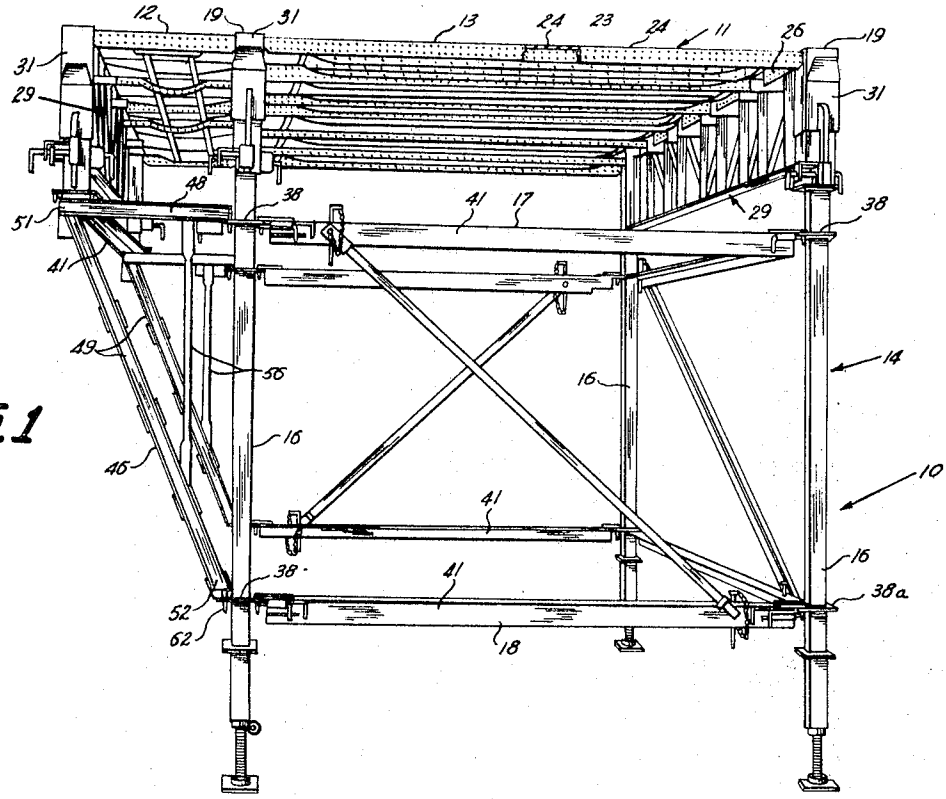


FIG. 1

FIG. 2

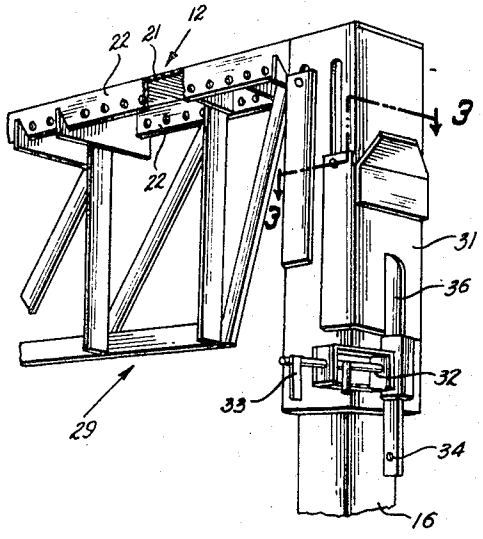
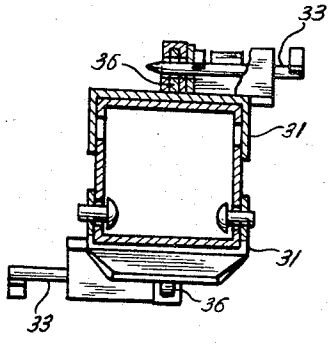


FIG. 3



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FIG. 4

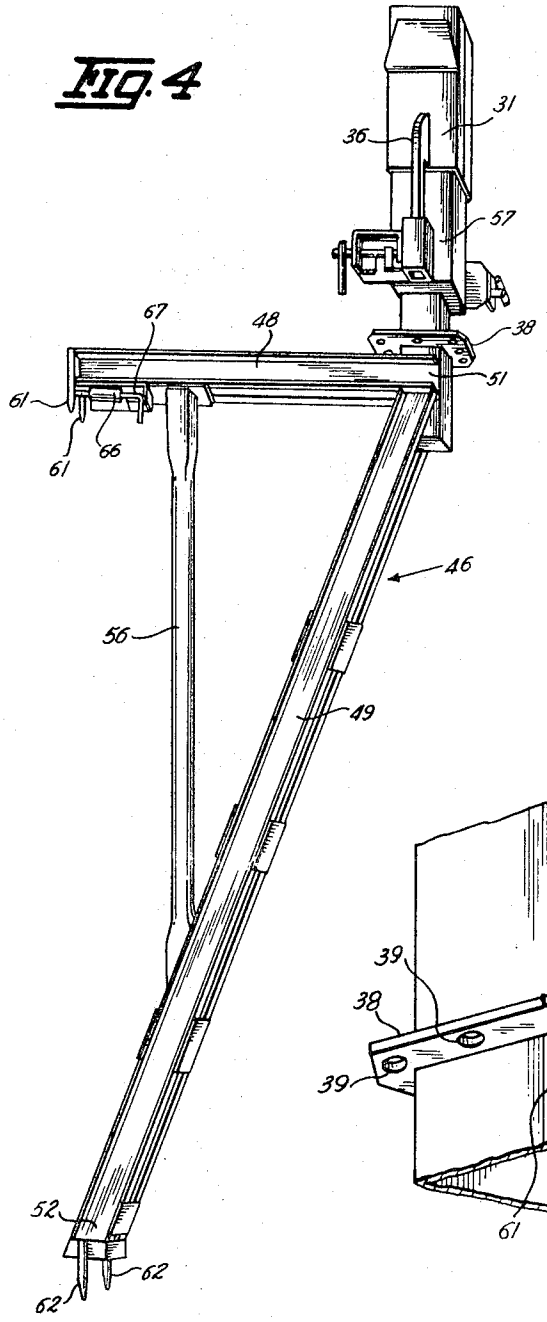
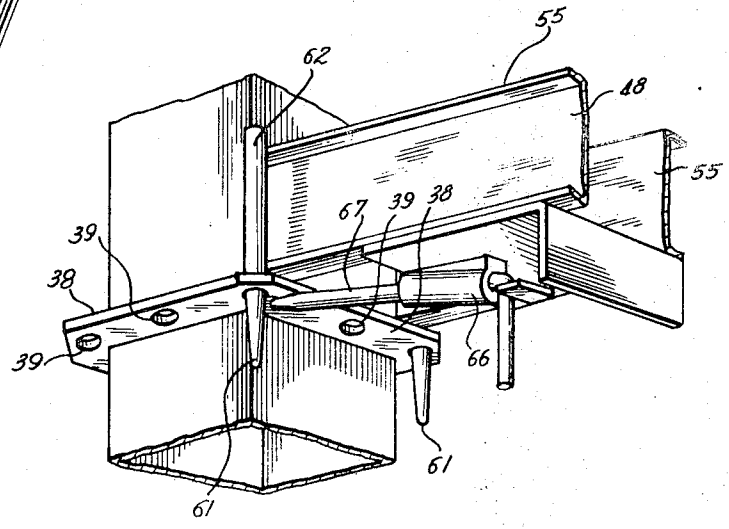


FIG. 6



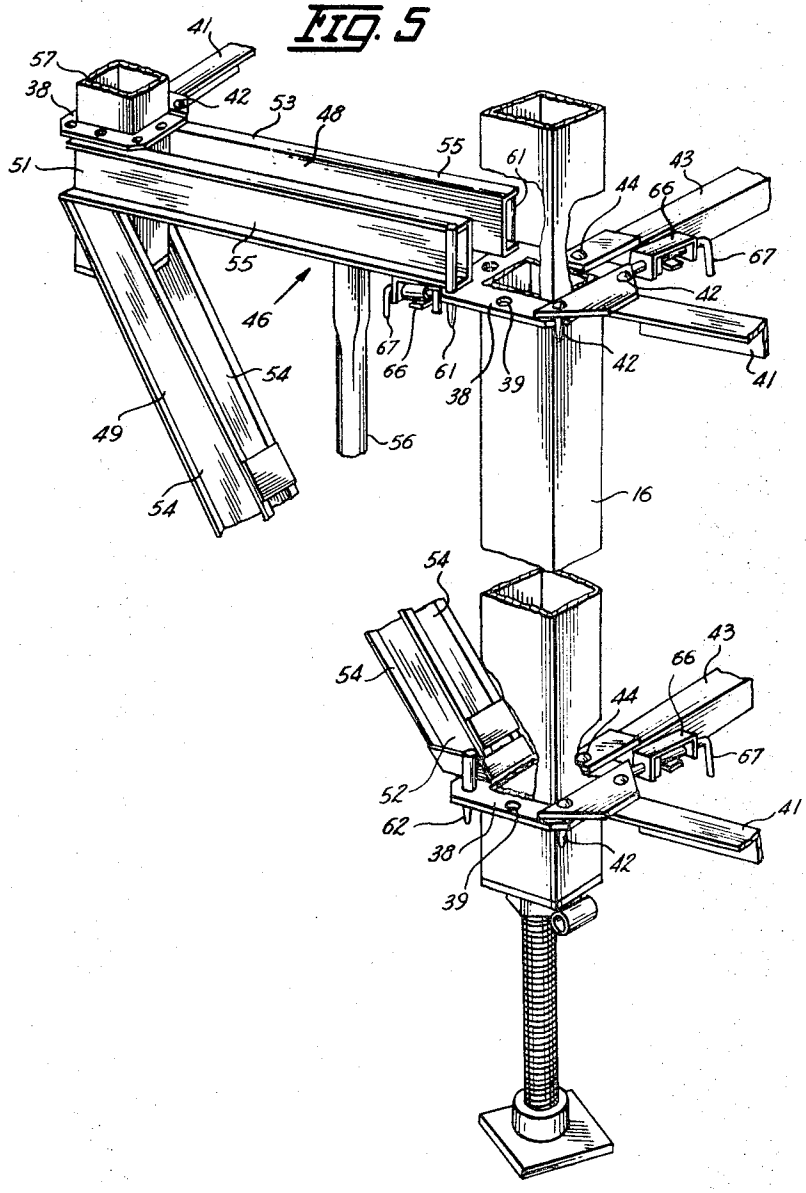
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FIG. 5



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3,533,592

SHORING STRUCTURE FOR CONCRETE FORMS

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Filed May 3, 1967, Ser. No. 635,806
Int. Cl. E04g 11/48
U.S. Cl. 249—18 1 Claim

ABSTRACT OF THE DISCLOSURE

The shoring structure includes four upright corner posts capable of being provided with attachable shore brackets that are connectable to the posts for extension laterally outwardly therefrom. Metal concrete forms are extended between and releasably connected to the posts and to the brackets to form a continuous horizontal supporting area, with the area portion overlying the brackets being in an overhanging relation relative to the normal area portion defined by the four corner posts. The normal area portion of the shore structure may thus be readily increased to provide a supporting area for cantilever floor structures such as outside balcony areas, or extended ledge work and the like where vertical support for the overhanging concrete supporting area is not readily available.

SUMMARY OF THE INVENTION

The shoring structure of this invention is of a knockdown construction capable of being quickly assembled on the job without the use of any special tools. Shore bracket attachments are connectable with a shore structure to provide when necessary an overhanging supporting area which constitutes a continuous horizontal extension of the normal supporting area of the shoring structure. The normal supporting area of the shoring structure is thus capable of being expanded without any corresponding increase in the frame size of the shoring structure.

DETAILED DESCRIPTION OF THE INVENTION

Further objects and features of the invention will become apparent from the following description when taken in connection with accompanying drawings in which:

FIG. 1 is a perspective view of a shoring structure with shore bracket attachments in assembly relation therewith;

FIG. 2 is an enlarged fragmentary perspective view of the upper portion of a corner post which forms a part of the shoring structure shown in FIG. 1, with parts broken away for the purpose of clarity;

FIG. 3 is an enlarged sectional detail view taken along the lines 3—3 in FIG. 2;

FIG. 4 is an enlarged perspective view of a shore bracket attachment shown in FIG. 1;

FIG. 5 is an enlarged foreshortened perspective view of a shore bracket shown in assembly with a corner post of the shoring structure illustrated in FIG. 1, with some parts being broken away and other parts shown in section to more clearly show such assembly; and

FIG. 6 is an enlarged detailed perspective view of a locking unit that is shown generally in FIG. 5.

With reference to FIG. 1 of the drawing, there is illustrated a shoring structure **10** for supporting a form assembly **11** that is comprised of a pair of transversely spaced longitudinally extended truss forms **12** and intermediate metal forms **13**. The shoring structure **10** includes a knockdown frame unit **14** which has four upright corner posts **16** connected together by means including upper and lower connecting frames **17** and **18**, respectively, of a like construction and releasably connected in a like manner with the posts **16**.

A side or longitudinal form **12** (FIG. 2) is of an inverted channel shape in transverse cross section so as to have a top flat surface **21** with depending side flanges **22**. A post **16** has a flat top surface **19**. Each intermediate form **13** includes a base or flat plate member **23** of a rectangular shape (FIG. 1) having depending side and end flanges **24** and **26**, respectively. The forms **13** are of a length equal to the transverse space between the longitudinally extended forms **12** to which they are releasably connected such that the top surface **23** of the forms **13** are in the horizontal plane of the top surfaces **21** of the side forms **12** to provide a flat continuous supporting surface for concrete or the like.

Each form **12** (FIGS. 1 and 2) constitutes a beam that is formed as part of a truss assembly **29** which is movably supported for up and down movement between corresponding longitudinally spaced posts **16** by means including mounting units **31**. Each mounting unit **31** is adjustably supported on a corresponding post **16** for vertical movement between an upper position, wherein the top surfaces of the forms **12** and **13** are located in the plane of the top surfaces **19** of the posts **16**, and a lower position wherein the top surfaces of the forms **12** and **13** are in a common horizontal plane located below the horizontal plane of the top surfaces of the posts **16**.

As shown in FIG. 3 a pair of mounting units **31** are associated with each corner post **16**, with the upper position of a mounting unit **31** being maintained by inserting a pin **32** of a locking unit **33** carried on a post **16** within an opening **34** formed in a latch member **36** carried on a mounting unit **31**.

As previously noted, the upper and lower connecting frames **17** and **18**, respectively, are of a like construction and similarly assembled with a corner post **16**. Only the upper connecting frame, therefore, will be described.

Each corner post **16** (FIGS. 1 and 5) at a position below a corresponding mounting unit **31** carries a laterally extended flange member **38** with each side of a flange **38** being provided with a series of three linearly spaced vertical holes **39**. Oppositely arranged pairs of frame members **41** are provided at each of their ends with a pair of downwardly projected connecting pins **42** adapted to be received within corresponding outside holes **39** in a side of the flange **38**, as best illustrated in FIG. 5. The other pair of opposite frame members **43** have each end thereof provided with a single connecting pin **44** for reception within a central one of the openings **39** in a side of the flange **38**, as is also shown in FIG. 5.

Referring to FIG. 1 it is seen that each upright post **16** has a lower flange **38** that is adapted for assembly with the lower connecting frame **18**. For a more detailed description of the knockdown frame unit **14**, truss assemblies **29**, mounting units **31** and connecting frames **17** and **18**, reference is made to the co-pending application of William A. Jennings, Ser. No. 483,587, filed Aug. 30, 1965, now issued Pat. No. 3,409,266.

A shore bracket **46** (FIGS. 1 and 4) is of an angulate shape and comprised of a horizontal supporting member **48** and a leg member **49** secured to the outer end **51** of the supporting member. From such outer end, the leg member **49** extends at an angle of about sixty degrees inwardly and downwardly in the plane of the supporting member **48** to a position wherein its lower end **52** is in vertical linear alignment with the inner end **53** of this support member **48**.

As best appears in FIG. 5 the support member **48** is formed of a pair of interconnected transversely spaced parallel channel beams **55** arranged in a back to back relation. In like manner the leg member **49** is formed of a pair of interconnected parallel channel beam members **54** arranged in a back to back relation and transversely spaced apart a distance equal to the transverse

spacing between the channel members **55**. An upright brace member **56** is extended between and connected to the support member **48** and the leg member **49**.

Positioned between and secured to the channel members **55** and **54** and at the outer end **51** of the support member **48** is an upright stub post **57** (FIGS. 4 and 5) of a size and shape corresponding to the corner posts **16** of the frame unit **14** (FIG. 1). A mounting unit **31** (FIG. 4) is assembled with the stub post **57** in all respects similar to the assembly of a mounting unit **31** with a corner post **16**. It is to be also noted that each stub post **57**, at a position below a corresponding mounting unit **31**, is provided with a flange **38**.

As shown in FIG. 4 the inner end **51** of the support member **48** is provided with a pair of transversely spaced depending connecting pins **61** which are in vertical alignment with a corresponding pair of connecting pins **62** secured to and depending from the lower end of the leg member **49**. The transverse spacing of the connecting pins **61** and **62** corresponds to the space between the outer holes **39** in the side of a flange **38**; and the vertical distance between the lower edge of the leg member **49** and the lower edge of the support member **48** is equal to the vertical distance between the top surfaces of the upper and lower flanges **38** that are carried on a corner post **16**.

In the assembly of a shore bracket **46** with the shoring structure **10**, a pair of the brackets are mounted on a pair of corresponding corner posts **16** to provide for the extension of the support members **48** laterally outwardly from one side of the frame **14**. This mounting is accomplished by merely dropping the connecting pins **61** and **62** within corresponding pairs of outer holes **39** in corresponding outer sides of the upper and lower flanges **38** on the selected pair of corner posts **16**. A locking unit **66** secured to the under side of the inner end of the support member **48** includes an inclined locking pin **67** is frictionally engageable with the under side of an associated flange **38**, in the manner shown in FIG. 6, so as to positively lock the pins **61** and **62** against upward movement out of the holes **39** in the flanges **38**.

The pair of shore brackets **46** are connected together at the flanges **38** on the stub posts **57** thereof by a brace member **41** (FIG. 5) similar in all respects to the frame members **41** of a connecting frame **17** or **18**. A truss assembly **29** (FIG. 1) is then extended between the stub posts **57** and connected to the mounting units **31** thereof, after which metal forms **13** are extended between and connected to the truss assembly **29** on the shore brackets and the next adjacent truss assembly **29** on the shoring structure **10**.

With all of the truss assemblies **29** supported on their corresponding mounting units **31** the composite form assembly comprised of the truss forms **12** and intermediate forms **13** is movable as a unit into and out of the plane of the top surfaces **19** of the corner posts **16** and stub posts **57**.

Importantly, it is to be noted that the additional supporting area provided by the shore brackets **46** constitutes an extension relative to the normal supporting area provided by the shore structure **10** as defined by the four corner posts **16**. This additional supporting area is thus positively carried in an overhanging relation relative to the frame **14** to provide for the laying of concrete over a supporting area that is continuous with, but outside of the supporting area defined by the four corner posts **16** of the frame **14**.

It is to be understood that a pair of the shore brackets **46** may be connected to any corresponding pair of corner posts **16**, so that the shoring structure **10** may have the

supporting area thereof concurrently extended from any number of the sides thereof.

Although the invention has been described with respect to a preferred embodiment thereof, it is to be understood that it is not to be so limited since changes and modifications can be made therein which are within the full intended scope of this invention as defined by the appended claims.

I claim:

1. In a shoring structure for metal concrete forms, including:

(a) a frame assembly including a plurality of upright corner posts,

(b) a pair of truss assemblies having horizontal top surfaces lying in a common plane,

(c) means connecting each truss assembly to and extended between a pair of oppositely arranged corner posts so that the pair of truss assemblies are in a parallel relation,

(d) a first plurality of form members extended between and releasably connected to said truss assemblies having horizontal top surfaces in said common plane, whereby said form members and truss assemblies form a unit assembly having a continuous concrete supporting surface,

(e) a pair of shore brackets corresponding to a pair of said corner posts located at one side of said frame assembly,

(f) each of said brackets including an elongated horizontal support member,

(g) coacting means on said corresponding pairs of posts and shore brackets for connecting said shore brackets to said posts with said support members extended outwardly from said one side of the frame assembly,

(h) said coacting means including at least a pair of vertically spaced horizontal flange means secured to each of said pair of posts and having upright holes therein,

(i) each of said shore brackets being provided with a pair of vertically spaced upright pin means corresponding to said flange means, and insertable within the holes thereof,

(j) means for locking at least one of said pin means against upward movement relative to a corresponding flange means,

(k) a third truss assembly extended between said support members,

(l) means mounting said third truss assembly on said support members adjacent the outer ends thereof with the top surface thereof in said common plane, and

(m) a second plurality of form members extended between and releasably connected to said third truss assembly and unit assembly having horizontal top surfaces in said common plane.

References Cited

UNITED STATES PATENTS

867,274	10/1907	Humphries	182—130 X
3,082,843	3/1963	Leonard	182—130 X
3,409,266	11/1968	Jennings	249—18
3,130,470	4/1964	Bowden et al.	249—28 X
3,239,188	3/1966	Gostling	249—18 X

J. SPENCER OVERHOLSER, Primary Examiner

U.S. Cl. X.R.

182—130, 179; 249—189