C. M. MARKHAM.

GIRDER FORM SUPPORT.

APPLICATION FILED MAY 20, 1912

1,128,809.

Patented Feb. 16, 1915.

2 SHEETS—SHEET 1.

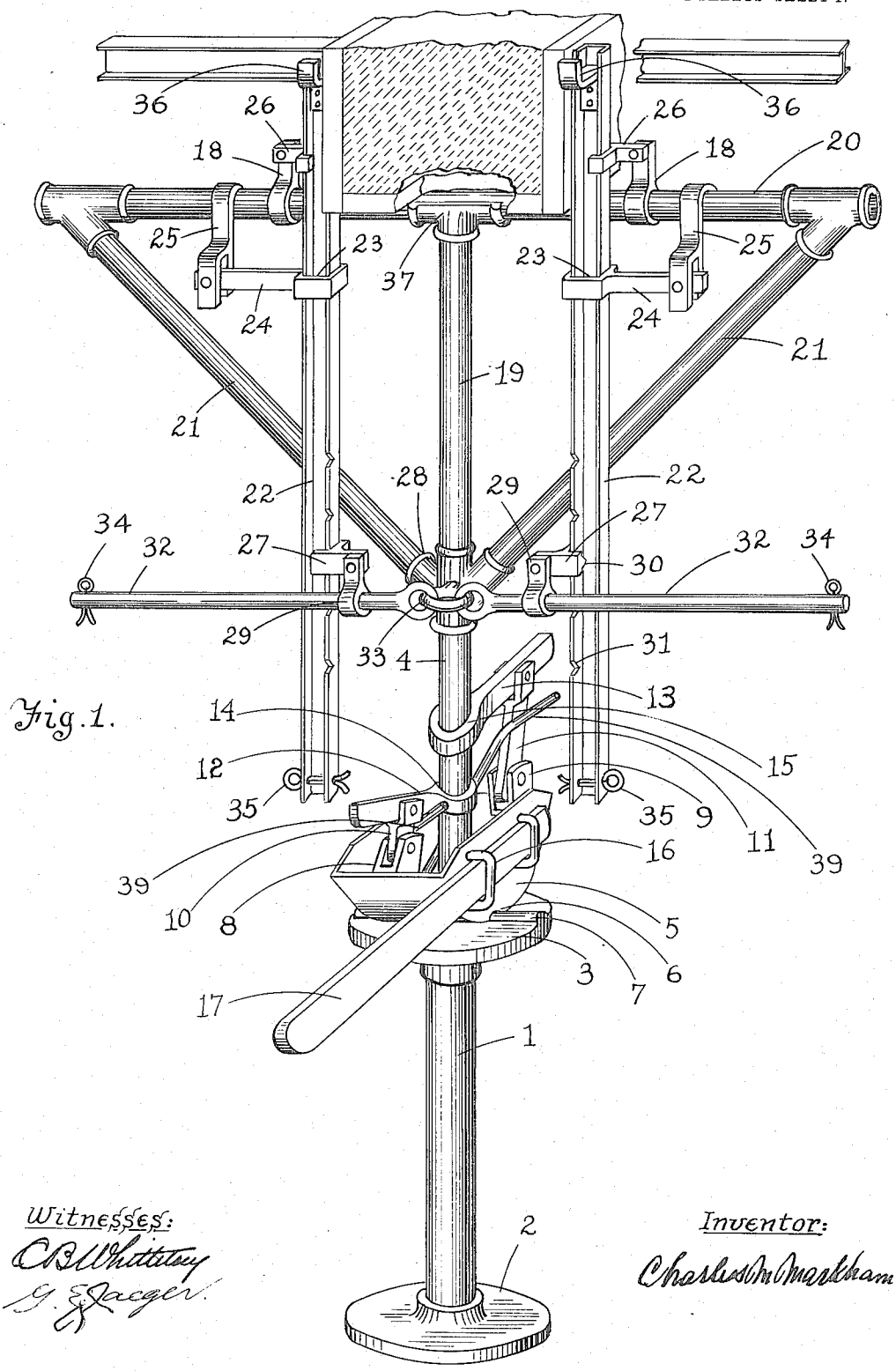


Fig. 1.

Witnesses:

C. B. Whittemore

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2 SHEETS—SHEET 2.

Fig. 3.

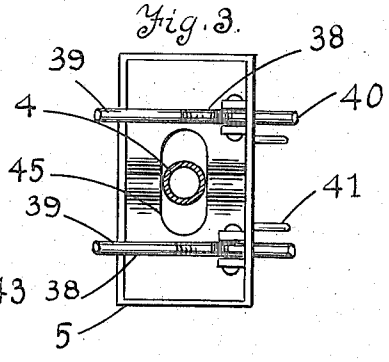


Fig. 2.

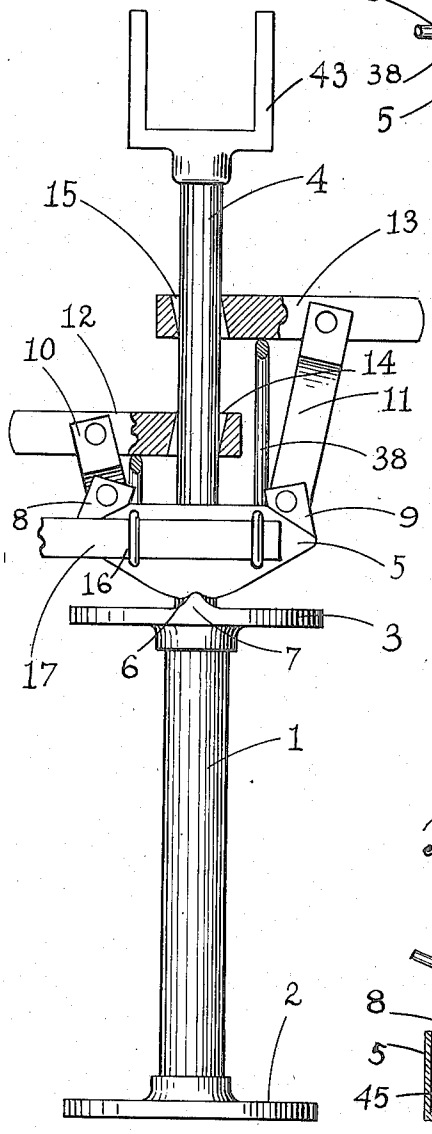


Fig. 4.

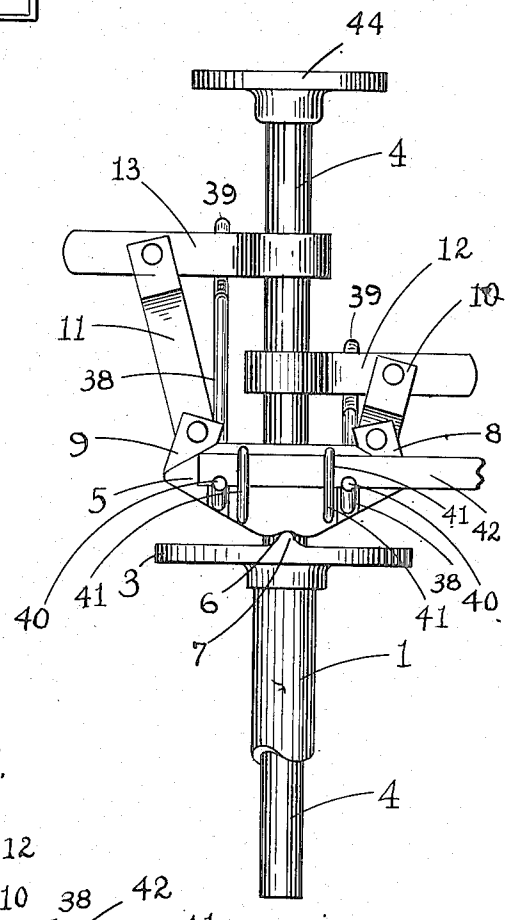
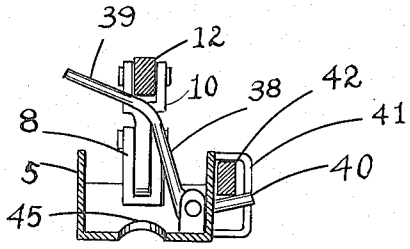


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES M. MARKHAM, OF SAN DIEGO, CALIFORNIA.

GIRDER-FORM SUPPORT.

1,128,809. Specification of Letters Patent. Patented Feb. 16, 1915.

Application filed May 20, 1912. Serial No. 698,450.

To all whom it may concern:

Be it known that I, CHARLES M. MARKHAM, a citizen of the United States, residing at San Diego, in the county of San Diego and State of California, have invented an Improved Girder-Form Support, of which the following is a full and exact description.

This invention has reference to an organization of elements of an improved construction, which are capable of acting as a lifting mechanism and a supporting device for forms such as are used in concrete construction, especially the forms used for floors and girders and for I beams, rods, planks, and the like, the said elements being so related that the organization will be effective for the support of a form for a concrete girder of any cross sectional dimensions, that a form for a girder with diverging sides disposed at any angle may be supported with equal facility, that the construction and arrangement of parts will be such as to be vertically adjustable, obviating the necessity in jacking up the floor joists or form plates, of wedges and other additional timbers as are ordinarily employed to effect such purpose, that the form supporting mechanism will be strong, simple, and durable, and therefore of a low cost to manufacture, that the organization shall contain no delicate or finely adjusted elements which would be likely to be affected by contact with, or clogged by accumulations of the concrete as used in the said concrete construction, that concrete forms may be readily and properly set up with accuracy with the organization of elements provided, that no wood need be employed in erecting mold forms with this apparatus, that the vertical adjustment provided will render the apparatus effective for all ordinary concrete construction, that all the elements of the device are as easily renewable as is practical and consistent with the strength required, that means are provided for the quick release of the device from the completed work or structure to which the same has been applied, and that the device or apparatus embodied in the herein described organization of elements, shall be as simple in design as may be practical to accomplish the results desired.

The principles herein related may be embodied into any suitable form of mechanism and combination parts provided that the elements thereof shall be so relatively proportioned and so arranged as to operate in the manner hereinafter described and perform the functions herein enumerated, and therefore for the purpose of explanation and to render the invention more intelligible, such invention may be embodied to comprehend a lifting, clamping, and supporting mechanism in which some of the elements will be operative relatively to the others for adjusting and maintaining concrete molds and forms in their set up positions, a preferred form of the invention, having the proper correlative parts, being shown in the accompanying drawings forming a part of this specification.

While simple and efficient means are herein provided for accomplishing the objects of the invention and the elements shown and described are well adapted to serve the purposes for which they are intended, it is to be understood that no limitation is necessarily made to the precise structural details exhibited, but that variations, alterations, and modifications, which may fall within the scope of the appended claims, may be adopted if desired, the essence of the invention comprising a standard, a movable member slidably mounted therein, a rocker carried by said standard, means for operating the rocker, gripping levers acting upon said movable member and actuated by said rocker, and means for clamping and supporting concrete molds and forms, carried by said movable member, the invention being fully illustrated in the accompanying drawings, whereon—

Figure 1 is a perspective view of a lifting jack and girder support incorporating the principles of this invention. Fig. 2 is a side elevation with the gripping levers partly in section. Fig. 3 is a plan and detail view of the rocker showing the release levers. Fig. 4 is a side elevation of the device disclosing the releasing levers and a portion of the bar which operates them. Fig. 5 is a transverse sectional and detail view of the rocker disclosing the relative positions of the gripping lever, the releasing lever therefor and the bar for operating the releasing lever.

Assuming the invention to be embodied in the form illustrated, the elements referred to comprise a standard 1, preferably constructed of steel or iron pipe, and having a flange or base 2, the opposite end being provided with a table support 3, having a rib thereon. A relatively movable member 4 is arranged in and concentric with said

standard and extends upward therefrom. A rocker 5 has a wide groove 6 upon the bottom thereof, said groove engaging with rib 7 on table 3. Rocker 5 carries a fork 8 and a fork 9, which are located respectively, on opposite ends of said rocker. Fork member 8, has a link member 10, pivotally connected thereto, and fork member 9, has a link member 11, pivotally connected thereto, link member 10, being a relatively short member and link member 11, being a relatively long member. The bifurcated upper ends of said link members have pivoted thereto gripping levers 12 and 13, the openings 14 and 15, provided therein, extending obliquely therethrough. Loops 16, on the side of the rocker, are adapted to receive a handle or operating bar 17. To obtain an adjustment of the relatively movable member 4, the said operating bar 17 is inserted in loops 16 and given an oscillating motion. This motion is transmitted to the rocker and causes the alternate depression of the opposite ends thereof, whereupon said link members 10 and 11 will release the respective gripping levers 12 and 13, attached thereto, which, upon their release, will drop down and again grip the central and movable member 4, and lift the same on the upward motion of the corresponding end of the rocker. While one gripping lever is released for obtaining a new grip on member 4, the opposite gripping lever retains its hold on member 4.

In combination with member 4, I have provided a double Y member 28, carrying the essential parts of my girder support, comprising a central pipe 19, extending upwardly therefrom; and a horizontally disposed pipe 20, which is adapted to support a girder form or mold for the reception of concrete material, the outer ends of said pipe 20, being further supported by brace members 21.

In order to support the side members of the girder form or mold, elongate members or bars 22, preferably of channel iron, are provided, the said bars 22, being slidably mounted in rectangular slots 23, obliquely disposed in clamp members 24, which are pivotally connected to hook members 25, which are adapted to engage with said horizontal bar or pipe member 20. Members 22, may be readily elevated to any position but will be locked against any vertical movement in any position by bifurcated members 26, and 27, which are pivotally connected to loop members 18 and 29 respectively, the said members 26 and 27 being adapted to bear against members 22, upon any downward movement thereof, the said members 22 being forced into engagement with the lateral edges of said members 24, 26, and 27. By such construction the greater the weight of members 22, the more secure will be the clamping thereof. To lower said members 22, it is only necessary to slightly raise the outer extremities of members 24, and to disengage members 27, whereupon said members 22 will drop because of their own gravity.

Loop members 18 and 29 have an obliquely disposed opening therein, not shown in the drawing, also members 24 are provided with obliquely disposed openings 23, and their action in gripping their support is similar to gripping levers 12 and 13. Therefore, to support girders of any width, the said members 18 and 29 may be moved horizontally upon their supports. To insure a positive engagement of members 27 with members 22, I have provided said members 27 with transversely extending ridges 30, the same being received by correspondingly shaped recesses 31, in members 22; each of the latter being provided with a series of such recesses thereby effecting a rigid securement thereof and permitting various adjustments to be made. Bars 32 which engage loop members 29, have their inner extremities looped around an eye 33, projecting from member 28, and are provided at their opposite ends with cotter pins 34, to prevent accidental disengagement of said members 29, therefrom. Similar pins 35 are provided in members 22. To support I beams and similar bars for carrying the floor beams and forms for the floor, the upper ends of members 22, are provided with brackets 36, which form with said members 22 a fork or support, by which I am enabled to support the forms and molds for combined floors and girders. It may be noted that central pipe or support 19, is provided with a half round fitting 37 which acts as a pillow for horizontal bar 20, thereby leaving said bar 20 smooth for supporting the bottom plank of a mold or form of any width.

Should it be desirable to lower the girder support slightly while in the set up position, the rocker member 5 has pivoted thereto releasing levers 38, having their inner extremities 39, extending upward and beneath gripping levers 12 and 13, and their outer extremities 40, extending from one side of the rocker. A pair of elongated loops 41, are adapted to carry an operating lever 42, which normally rests lightly upon releasing levers 38. By operating lever 42, the outer extremities of levers 38 will be alternately depressed, causing the inner extremities to engage with and thereby release gripping levers 12 and 13, and thereby lower member 4, the downward movement of which may be controlled by lever 17 on the opposite side of rocker 5.

It is to be understood that various forms of girder supports may be used, a modified form being shown in Fig. 2 having a bracket 43 attached to member 4, and a modified

form being shown in Fig. 4, having a flange member 44 carried by member 4. Rocker 5 is provided with an elongated opening 45, through which member 4 passes.

The gripping tendency of the several clamping hooks, loops, and levers, is increased in proportion to the weight or pressure placed thereon. All elements of the device may be of iron or steel, an especial advantage in concrete construction, and may be adjusted laterally, angularly, and vertically, adapting the device for various sizes and shapes of girders.

I claim as my invention:

1. In a girder form support, the combination with a frame comprising a vertical member, a double Y member carrying the vertical member, a horizontal bar supported by said vertical member, braces extending from the outer ends of the horizontal bar to said double Y member, of an eye projecting from said double Y member, bars having their inner extremities linked to said eye, loop members slidably mounted on said bars, slotted members pivoted to said loop members, elongate bars carried by said slotted members, and means for guiding and supporting said elongate bars mounted on said horizontal bar.

2. In a girder form support, the combination with a frame comprising a horizontal bar and three braces supporting said bar, of an eye projecting from said frame, horizontally disposed alining bars connected to said eye, loop members slidably mounted on said first named horizontal bar and said alining bars, bearing members connected to said loop members, hook members slidably mounted on said first named horizontal bar, gripping members on said horizontal member, and elongate channel irons supported by said bearing members and said gripping members whereby said elongate channel irons are held in their downward movement.

3. In a girder form support, the combination with a frame comprising a double Y member, a horizontal bar and three branches extending between said horizontal bar and said double Y member, of an eye projecting from said frame, horizontally disposed alining bars connected to said eye, loop members slidably mounted on said horizontal bar, loop members slidably mounted on said alining bars, slotted members pivoted to said loop members, channel irons carried by said slotted members, and means on said horizontal bar for guiding and supporting said channel irons.

4. In a girder form support, a frame comprising a double Y member, a horizontal bar, a half round member supporting said horizontal bar, a vertically extending brace supporting said half round member and extending from said double Y member, angularly disposed braces supporting the ends of said horizontal bar, an eye on said double Y member, alining bars connected to said eye, loop members slidably mounted on said horizontal bar, loop members slidably mounted on said alining bars, slotted members pivoted to said loop members, hook members slidably mounted on said horizontal bar, gripping members pivotally mounted on said hook members, elongate bars slidably mounted in the slots in said slotted members and said gripping member, whereby they are normally held from downward movement by the pressure upon the edges of said slots and by said gripping members, the said elongate bars having a series of recesses and transverse ridges on some of said slotted members adapted to engage in said recesses.

In testimony whereof I have affixed my signature to the foregoing specification, this 11th day of May, in the year 1912.

CHARLES M. MARKHAM.

In the presence of—

C. B. WHITTELSEY,

G. E. JÆGER,