

April 9, 1946.

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2,398,152

ADJUSTABLE SUPPORT FOR CONCRETE FLOOR FORMS

Filed Nov. 15, 1944

2 Sheets-Sheet 1

FIG. 1.

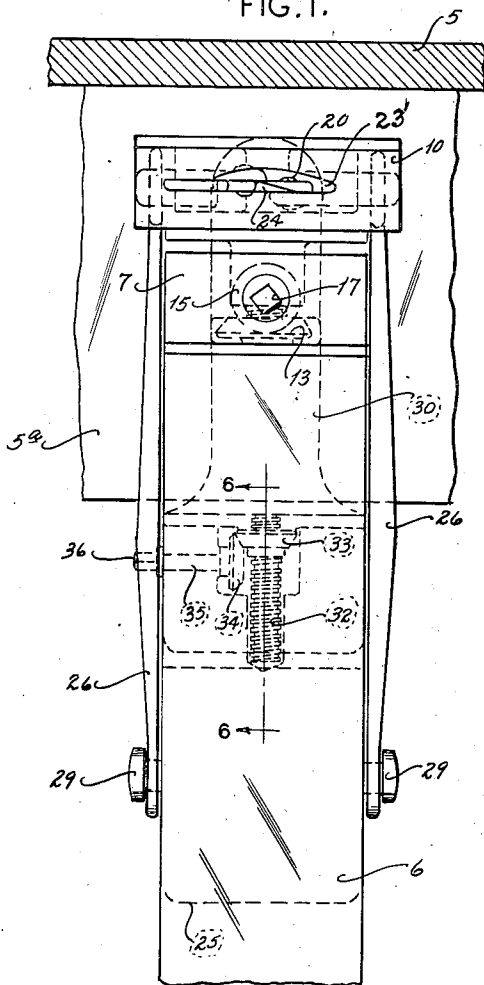


FIG. 2.

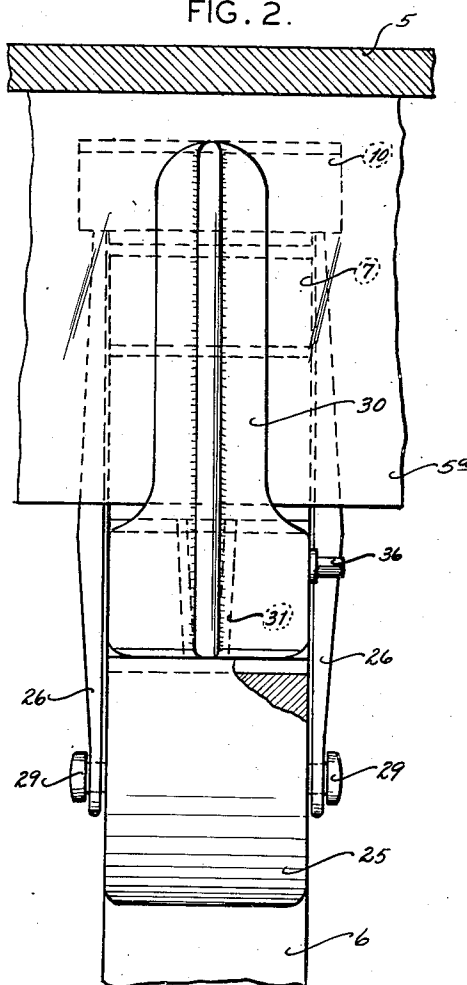


FIG. 6.

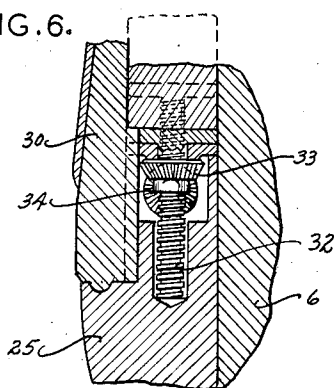
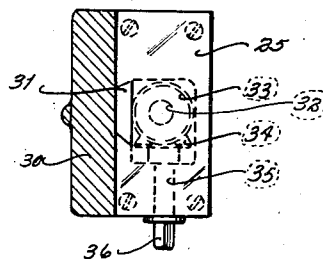


FIG. 7.



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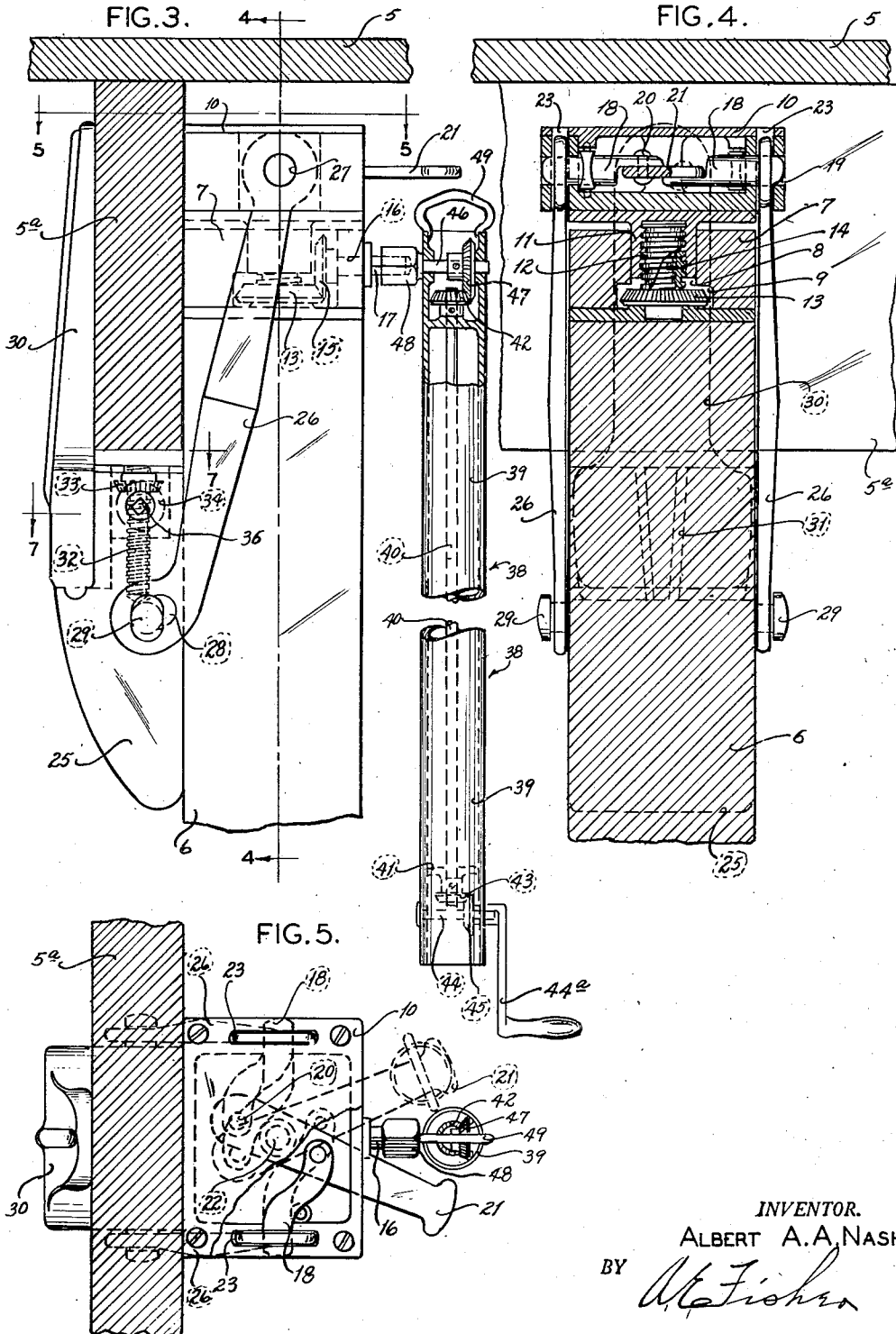
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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ADJUSTABLE SUPPORT FOR CONCRETE
FLOOR FORMS

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Application November 15, 1944, Serial No. 563,548

6 Claims. (Cl. 254—100)

This invention relates to adjustable and removable brackets or props for supporting the floor forms in concrete floor construction. Ordinarily such floor forms comprise a series of joists or beams supported in horizontal and parallel spaced relation upon posts and cross braces to which posts the joists are nailed, the said joists being then covered with one-inch boards and the plastic concrete or "wet mix" finally poured upon and spread evenly over the flooring as thus supported in place. This species of supporting structure however is relatively tedious and costly in erecting and also in dismantling and removing, involving as it does the pulling apart of the timbers and the removal of nails.

It is the prime object of the present invention therefore to provide a practical and efficient form of brace or form support, or form construction bracket, for the purpose of positioning below the concrete floor form such as above referred to, the same being adapted for removably mounting in place (without the use of nails) below any one of the joists of the floor form, and being adjustable vertically for the purpose of supporting and levelling the floor form as may be found desirable in the work.

Another object of the invention is to provide and implement an adjustable and removable form support for concrete floors, of the kind referred to and not involving the use of nails or other fastenings to support the same in place beneath a floor form as erected for the construction of a concrete floor, the same comprising a post or plurality of posts for positioning vertically below the floor form and less in height than the vertical spacing between the floor form and the footing upon which the post is seated, a gear box mounted atop the post and formed with a central, cylindrical gear recess opening upwardly, a lift box mounted atop the gear box and provided at its under side with a cylindrical, or round sleeve, stem or shank for telescopically seating within the cylindrical recess of the gear box, the said sleeve or hollow shank being interiorly screw threaded for engaging a jack screw seated within the recess of the gear box, means for operating the jack screw for raising or lowering the lift box, a pair of pivot lugs slidably mounted in the lift box and arranged for projecting at their outer ends through apertures formed through opposite sides of the lift box, means for slidably projecting and retracting the said pivot lugs, as desired in the operation of the device and for the purpose of dismantling the apparatus or for operatively erecting the same as may be re-

quired in use, a pair of lift arms suitably apertured at their ends and adapted at their upper ends for slidably and removably engaging the projected ends of the said pivot lugs at opposite sides of the lift box, these said arms being thus removable from the lift box by merely retracting the pivot lugs inwardly of the box, the lower ends of the lift arms being turned angularly outward, a brace shank removably supported between the lower ends of the lift arms by means of studs seated in opposite sides of the brace shank and over which studs the apertured lower ends of the lift arms are removably seated, the said brace shank being positioned freely alongside the said post and being recessed out longitudinally through its upper end, a jack screw operatively seated in the said recess of the brace shank and arranged to move upwardly therefrom or to retract downwardly therein, means for operating the said jack screw, a brace for removably seating at the outer margin of the brace shank, these elements being complementally formed for such purpose, the brace shank being thus adapted for positioning beneath any one of the horizontal joists of the said floor form, with the main supporting post at one side of the joist and the said brace at the opposite side thereof, whereby through the manipulation of the said jack screws the floor form may be supported and may be raised or lowered as found necessary for the purpose of levelling the same.

Still another object of the invention is to provide in combination with the apparatus or adjustable support as above referred to, an auxiliary operating tool adapted for operating the jack screws referred to.

With the stated objects in view, together with such other and additional objects and advantages as may appear from the specification, a preferred embodiment of the invention and the elements thereof, is shown in the accompanying drawings.

Figure 1 is a frontal elevation of the form construction bracket or support comprising the subject matter of this invention, the same being shown as positioned below a concrete floor form or structure, the lower portion of the main post or support being broken away.

Figure 2 is a view similar to that of Figure 1, showing however the assembly of Figure 1 in rear elevation.

Figure 3 is a side elevation of the assembly as shown in Figure 1, and taken at an angle of ninety degrees thereto.

Figure 4 is a section on the line 4—4 of Figure 3.

Figure 5 is a view taken on the line 5—5 of Figure 3.

Figure 6 is a sectional detail view taken on the line 6—6 of Figure 1.

Figure 7 is a sectional detail view taken on the line 7—7 of Figure 3.

The invention is designed for positioning, supporting, raising and levelling and raising and lowering a section of a conventional concrete floor form, and levelling the said form preliminary to pouring and spreading the plastic concrete or "wet mix" thereon. Such a section of floor form is represented in the drawings at Figures 1 and 3. The invention which comprises the subject matter of this invention includes a main or base post 6 as positioned underneath a floor form 5, the said post 6 being made of any suitable material such as wood and of any suitable cross sectional area. The base post 6 is of substantially less length or height than the distance between the footing (not shown) upon which the post is set and the floor form above. A gear box or holder 7 is formed upon or mounted atop the post 6, the same being formed with a central cylindrical recess or socket 8 which opens out upwardly as shown, the base or lower end of the recess being undercut and extended circularly into the wall of the recess, as shown at 9, for receiving a bevel gear later to be described.

A lift box 10 is seated atop the gear box 7, the same being formed or provided with a cylindrical and hollow stem, sleeve or shank 11 depending centrally from its lower side or bottom wall and telescopically seated within the cylindrical recess 8 of the gear box. A conventional form of jack or jack screw 12 is operatively seated within the recess 8 of the gear box 7, the component bevel gear 13 thereof horizontally seated within the undercut recess 9, and its screw stem 14 extended outward in threaded engagement with the interiorly and complementally screw threaded shank or sleeve 11. A complementary bevel gear 15 is placed angularly in mesh with the gear 13, being supported in operative relation thereto at the inner end of a jack shaft 16 journaled horizontally outward through the gear box 7 and terminating in the squared shank 17 adapted to engage a socket wrench or any special operating tool such as will be later described. Thus rotation of the jack shaft 16 will serve to raise or lower the lift box 10. A pair of rounded and suitably curved pivot lugs 18 are slidably mounted within the lift box 10 and are arranged at their outer ends to slidably project or retract through apertures 19 formed through the opposite sides of the box 10, the inner ends of these lugs being curvedly spaced apart and pivotally connected as at 20 to the inner end of an operating lever 21 which in turn is pivoted as at 22 medially within the lift box 10, the pivot point 22 being located midway between the curved inner ends of the lugs 18. The free end of the lever 21 is passed slidably out through an elongated slot 23' formed through a side of the box 10, this said slot being formed with a raised latch-lip 24 adapted to receive and hold the lever 21 to that side of the box 10 designed for projecting the pivot lugs 18 outwardly of the box, and holding them in such projected position. It is thus apparent that by merely pushing the lever 21 upwardly for clearing the lip 24, this lever may then be swung over to the opposite end of the slot 23', for the purpose of

retracting the lugs 18 inwardly of the box 10, for freeing and removing elements depended from the outer ends of the lugs, which elements will be later described and explained.

A brace shank or butt 25 is freely and slidably positioned at the outer side of the main post 6, and is operatively supported in position by means of a pair of lift arms 26 extending into slots 23 of the lift box 10 and which are circularly apertured at their upper ends, as at 27, for pivotally receiving the projected outer ends of the lugs 18, the lower ends of these arms being off-set outwardly and ovately slotted as at 28 for lockingly yet removably engaging studs 29 seated in opposite sides of the brace shank 25 in transverse alignment, and whereby these elements are operatively yoked together. Thus by operating the jack screw 12 in the manner specified, the brace shank 25 may be raised or lowered as desired in use. A brace 30 is removably seated at the outer side of the shank 25, these elements being complementally mortised and dovetailed for the purpose as indicated at 31, and by virtue of which tongued and grooved formations, these elements may be easily assembled or dismantled. The said brace shank 25 is recessed out longitudinally and cylindrically through its upper end for receiving a conventional form of jack screw 32, which is provided with the bevel gear 33 at its upper end and which meshes with a complementary bevel gear 34 at the inner end of a jack shaft 35 journaled horizontally outward through the shank 25 and terminating in the squared shank 36 corresponding with the squared shank 17 of the shaft 16 above referred to, and likewise adapted for engaging a suitable socket wrench or other special tool.

In the use of the apparatus as described, the brace shank 25 is positioned beneath a joist 5a of the form flooring 5, with the main post 6 at one side thereof and the brace 30 at the opposite side. Operation of the jack screws 12 and 32 will then function to raise or lower the floor section 5, and to brace the apparatus in upright position beneath the floor section, in the manner explained. These jack screws may be operated by means of a conventional socket wrench (not shown) applied to the squared shanks 17 and 36, but the present invention contemplates and includes a special form of operating tool referred to generally at 38 and which includes an elongated tubular housing or sleeve 39, of suitable length, through which there is longitudinally journaled the operating shaft 40, rotatably supported in the transverse webs 41 at the ends of the sleeve. Bevel gears 42 and 43 are keyed as shown upon the ends of this shaft, outwardly of the said webs, and a crank shaft 44 is journaled transversely through the inner or hand end of the housing or sleeve 39, and on which crank shaft a bevel gear 45 is keyed and placed in mesh with its complementary bevel gear 43 of the operating shaft 40. Similarly a wrench shaft 46 is journaled transversely through the outer or working end of the sleeve 39, the same having keyed thereon a bevel gear 47 in mesh with the gear 42 of the shaft 40. A squared socket member 48 is anchored upon the extended outer end of the wrench shaft 46, said socket being adapted to seat over and upon the squared shanks 17 and 36 of the described jack screws. The crank shaft 44 is provided with the outwardly extended crank 44a. An open loop 49 is rigidly joined to the working end of the sleeve or housing 39 and extends outwardly therefrom

as shown. By the use of this tool as described the jack screws 12 and 32 may be operated conveniently while positioned in otherwise somewhat difficult or inaccessible locations. After the apparatus as described has served its purpose, it may be readily disconnected and removed by merely lowering the jack screws, and then by means of the loop 49 and hooking same over the outer end of the lever 21 this lever may be raised for freeing it from the latch-lip 24 and then swung over to the opposite end of the slot 23' for retracting the pivot lugs 18 and dismounting and removing the lift arms 26. Or if desired these operations may be reversed and the lever 21 first operated for freeing the arms 26, and the jack screws subsequently lowered. Thus the apparatus may be removed from location and dismantled.

While I have here shown and described a preferred embodiment of the invention and preferred structural features thereof, this embodiment as well as the structural features may be changed as desired, within the scope of the claims.

I claim:

1. An adjustable support for concrete floor forms and construction, the same comprising a main post for positioning vertically below the floor form with a clearance space therein between, a gear box mounted atop the post and formed with a central cylindrical gear recess opening upwardly, a lift box mounted atop the gear box and provided at its under side with a tubular shank telescopically seated within the cylindrical recess of the gear box, the said lift box being formed with apertures through opposite sides thereof for passing pivot lugs, and the said shank being interiorly screw threaded, a jack screw seated within the recess of the gear box in mesh with the shank of the lift box, means extended outwardly from the gear box and connected with the jack screw therein for operating same, a pair of pivot lugs slidably mounted within the lift box and arranged for projecting at their outer ends through said apertures and for retracting inwardly of the box, a lever pivoted within the box and having means extending outwardly thereof and pivotally connected to said pivot lugs for slidably projecting or retracting the said pivot lugs, a brace shank removably and slidably positioned at the outer side of the said main post, a pair of lift arms suitably apertured at their ends and thereby adapted at their upper ends for slidably and removably engaging the projected ends of the said pivot lugs of the lift box, the lower apertured ends of the lift arms being positioned at opposite sides of the brace shank, studs passed through the apertured ends of the lift arms into the sides of the brace shank for pivotally connecting the elements, the said brace shank being recessed out cylindrically through its upper end, a jack screw operatively seated in the said recess, means for operating this jack screw, and a brace adapted for removably attaching upon the outer side of the brace shank, the brace shank being thus adapted for positioning beneath a joist of a floor form with the main post at one side thereof and the brace at the opposite side thereof, where-

by through manipulation of the jack screws the floor form may be supported and levelled as necessary.

2. In an adjustable form support for concrete floor construction, the said form including spaced horizontal joists with flooring laid thereover, a main supporting post for positioning below the floor form at one side of a joist, a lift box mounted atop the main post, means for raising or lowering the lift box relative to the top of the main post, a brace shank positioned freely at one side of the main post and beneath the said joist, a pair of lift arms angularly extended at opposite sides of the main post and brace shank and pivotally connected at their ends to these elements, and a brace adapted for removable attachment to the outer side of the brace shank and said joist.

3. In a device according to claim 2, the said brace shank being recessed out through its upper side, a jack screw seated within the said recess, and means extended outwardly for operating the jack screw to contact the said joist for supporting or levelling same.

4. In an adjustable and collapsible floor form support for concrete floor construction, the said floor form including spaced horizontal joists with flooring laid thereover, a main supporting post for positioning below the floor form at one side of a joist, a gear box atop the main post, a jack screw operatively mounted in the gear box and including a jack shaft journalled laterally outward therefrom and ending in a squared shank for engaging a wrench, a lift box mounted atop the gear box and provided at its under side with an interiorly threaded tubular shank threadedly engaging the jack screw of the gear box, whereby through rotation of the said jack shaft the lift box may be raised or lowered, a pair of pivot lugs slidably mounted within the lift box and adapted at their outer ends to reciprocate through apertures formed in opposite sides of the lift box, a brace shank positioned slidably at one side of the main post beneath the said joist, pivot studs seated in opposite outer sides of the brace shank, a pair of lift arms angularly extended across the opposite sides of the lift box and brace shank, said arms being apertured at their ends and thereby adapted to removably seat over the projected pivot lugs of the lift box at their upper ends and over the pivot studs of the brace shank at their lower ends, whereby through operation of the said jack screw of the gear box and resultant raising of the lift box the brace shank will be correspondingly raised, together with the floor joist under which it is positioned.

5. In a device according to claim 4, the said brace shank being recessed out through its upper side, a jack screw mounted within the said recess, and a jack shaft journalled laterally outward from the jack screw and ending in a squared shank for engaging a wrench.

6. In a device according to claim 4, a brace adapted for removable attachment to the outer side of the brace shank and extended upwardly therefrom across the outer side of the said floor joist oppositely to the said lift box as positioned at the inner side of the joist.

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