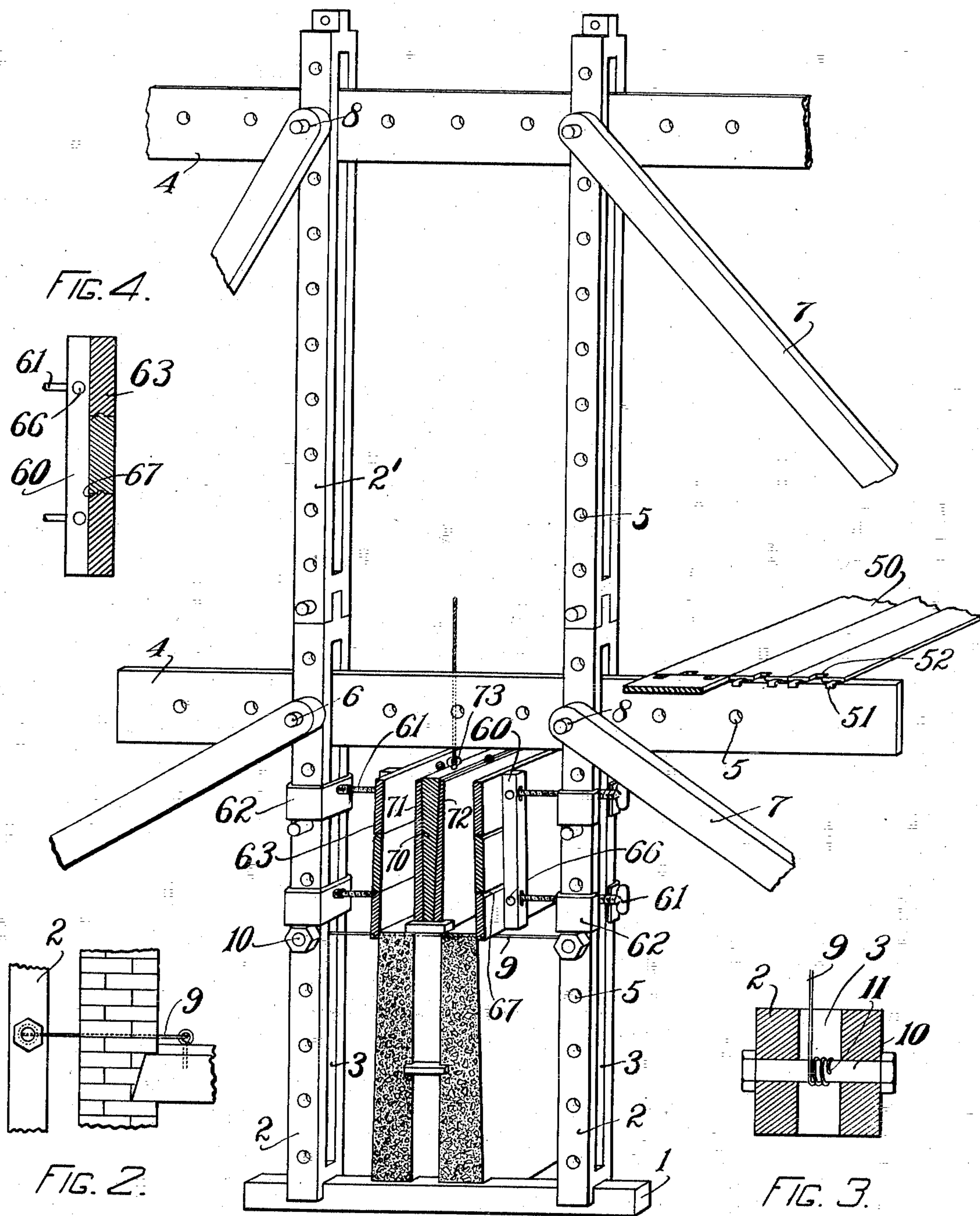


J. DAISLEY.  
 BUILDER'S APPARATUS.  
 APPLICATION FILED JUNE 11, 1908.

966,802.

Patented Aug. 9, 1910.

3 SHEETS—SHEET 1.



WITNESSES  
 A. T. Palmer  
 Anna B. Lindsey

FIG. 1.

INVENTOR  
 JAMES DAISLEY  
 BY HIS ATTORNEY

Ernest Kent

J. DAISLEY.  
 BUILDER'S APPARATUS.  
 APPLICATION FILED JUNE 11, 1908.

966,802.

Patented Aug. 9, 1910.

3 SHEETS—SHEET 2.

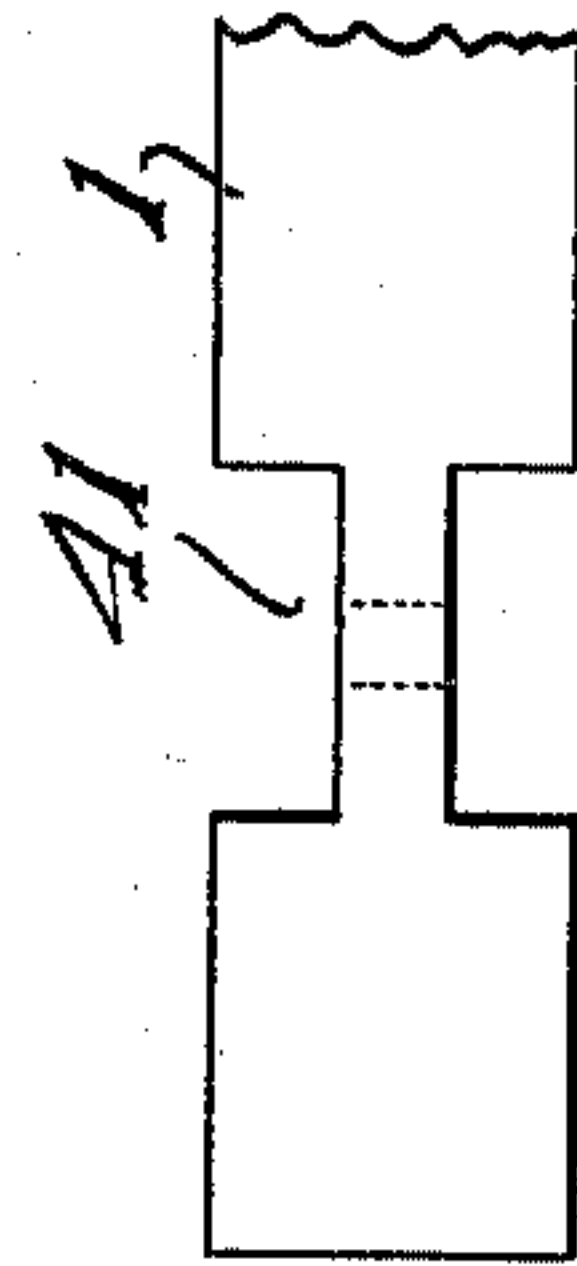
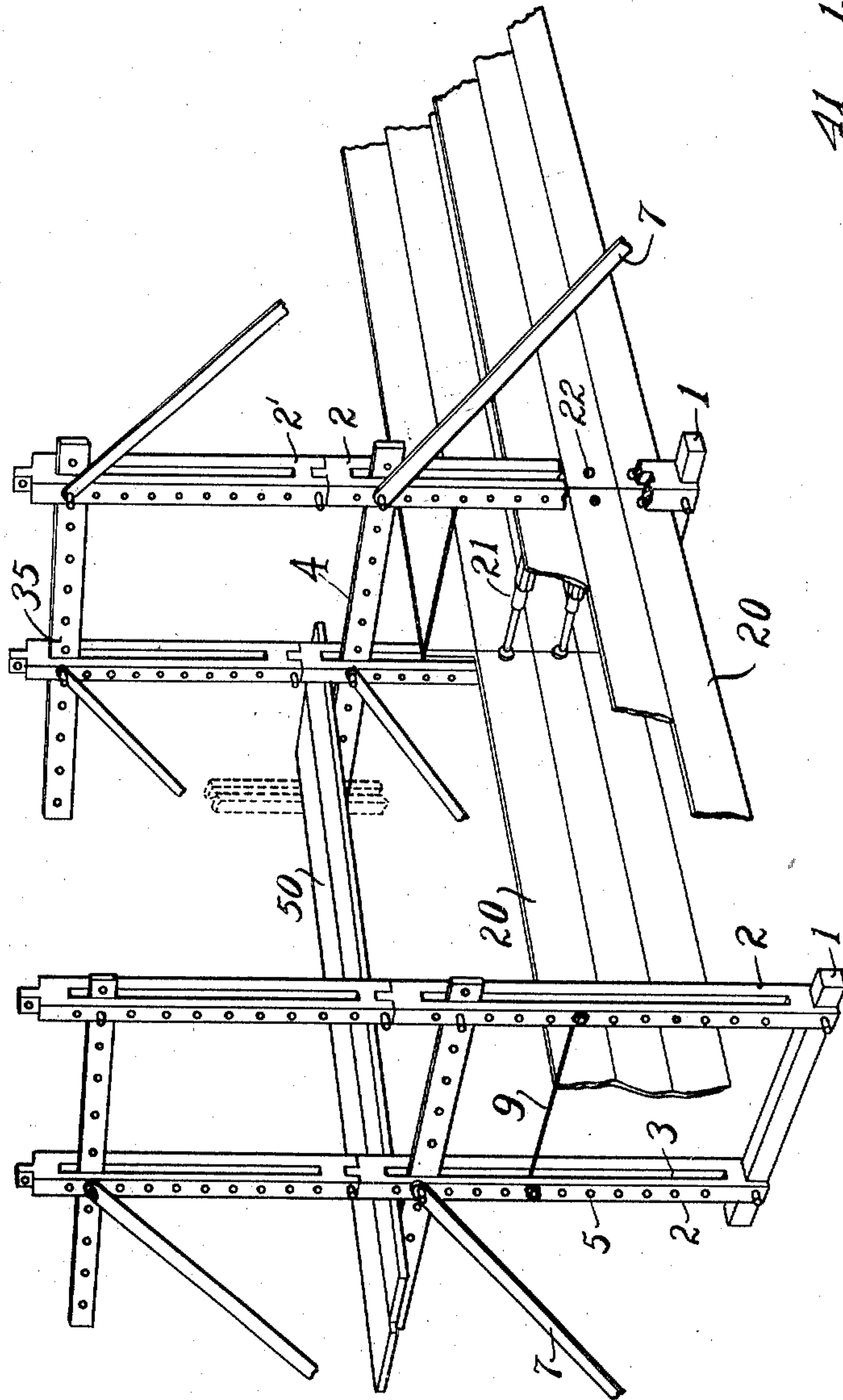


FIG. 9.

FIG. 5.

WITNESSES

*A. T. Palmer*

*Anna B. Lindsay*

INVENTOR

JAMES DAISLEY

BY HIS ATTORNEY

*Everett Kent*

J. DAISLEY.  
 BUILDER'S APPARATUS.  
 APPLICATION FILED JUNE 11, 1908.

966,802.

Patented Aug. 9, 1910.

3 SHEETS—SHEET 3.

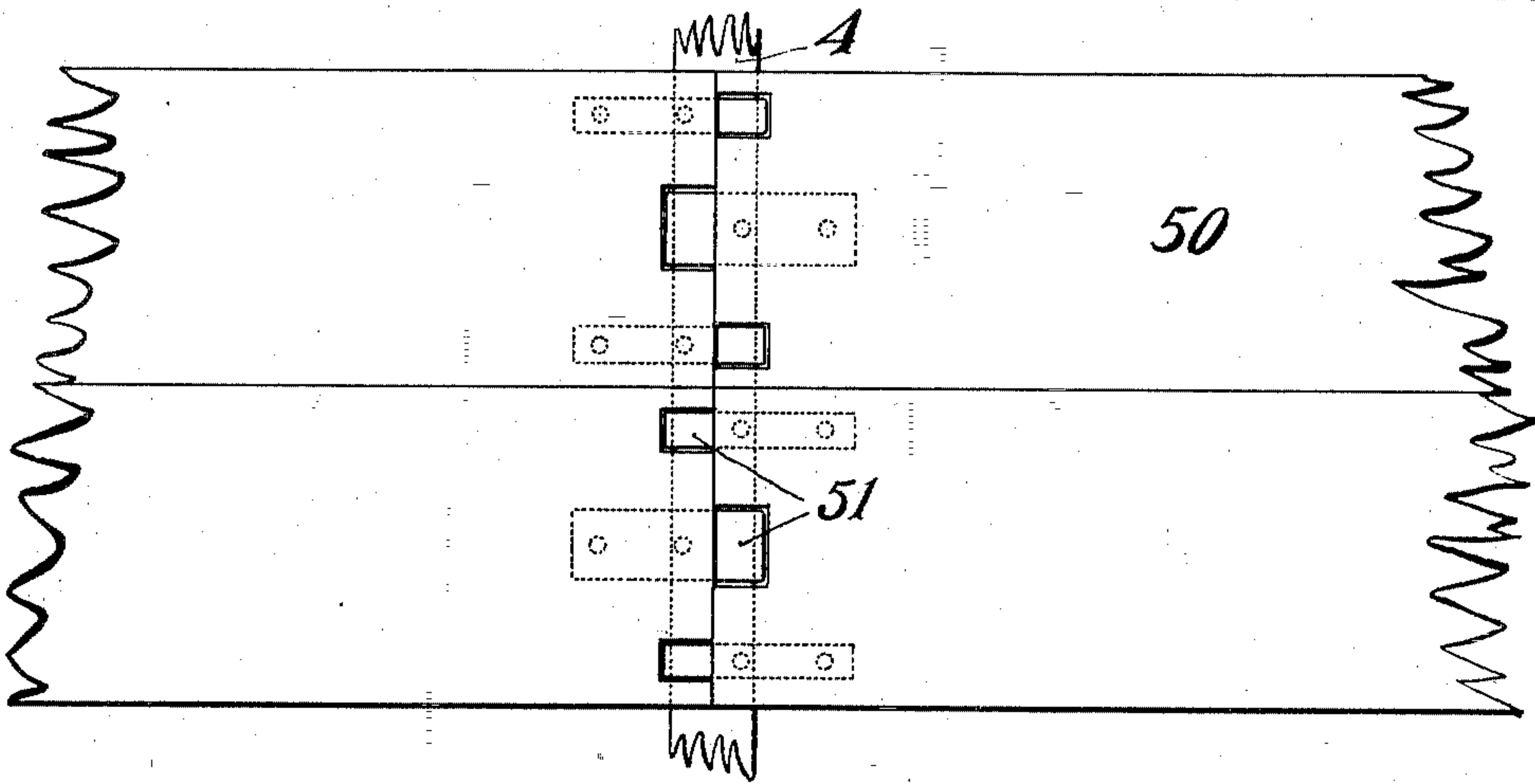


FIG. 6.

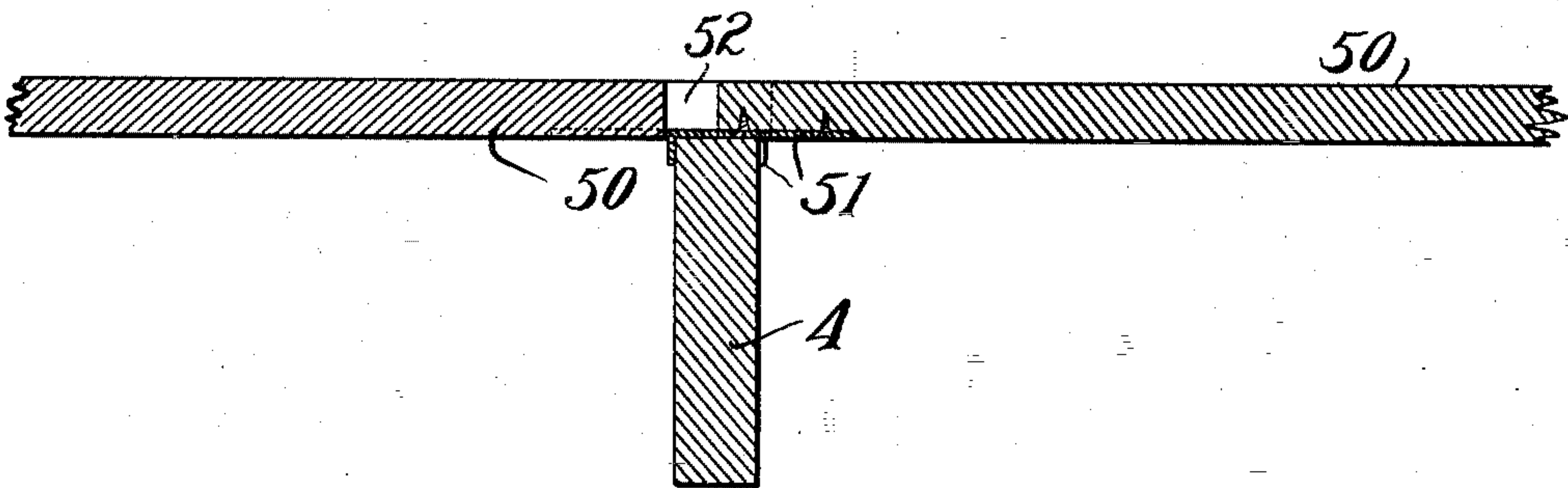


FIG. 7.

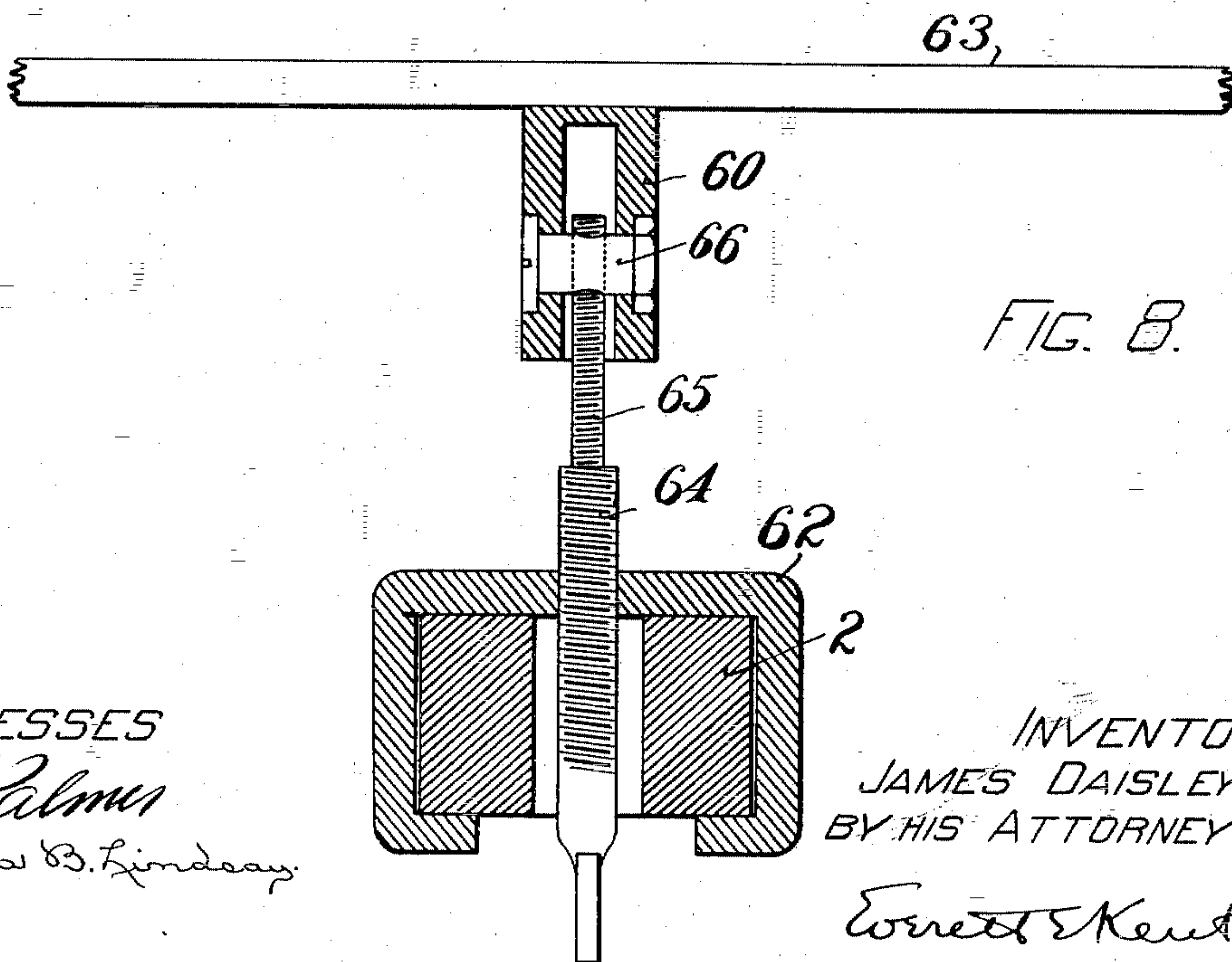


FIG. 8.

WITNESSES

*A. T. Palmer*

*Anna B. Lindsey*

INVENTOR

JAMES DAISLEY  
 BY HIS ATTORNEY

*Ernest E. Kent*



# UNITED STATES PATENT OFFICE.

JAMES DAISLEY, OF SOUTH FRAMINGHAM, MASSACHUSETTS.

## BUILDER'S APPARATUS.

966,802.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed June 11, 1908. Serial No. 437,929.

*To all whom it may concern:*

Be it known that I, JAMES DAISLEY, a resident of South Framingham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Builders' Apparatus, of which the following is a specification.

This invention relates to builder's apparatus.

More particularly it relates to a frame work and related parts which are used in the process of building a wall. It is here illustrated and described more particularly as it may be applied to a concrete wall, but its use is not limited to that and in many respects it may be applied to masonry walls, particularly brick walls.

The invention relates in general to the structure of a frame work or staging, by which a mold for the concrete may be supported, the supports for the mold-faces and means for adjusting them in proper location and at proper angles; and other features incidental to this, as will appear from the following description and the accompanying drawings, in which:

Figure 1 represents an embodiment of the invention in end elevation, in vertical section; Fig. 2 is a detail showing the manner of applying one of the features of the invention to a brick wall; Fig. 3 is a plan in section of a detail of Fig. 1; Fig. 4 is an enlargement of a detail of Fig. 1 seen in end elevation; Fig. 5 is a perspective view of a different application of the invention; Fig. 6 is a plan of a detail from Fig. 1; Fig. 7 is a side elevation in section of the same; Fig. 8 is a plan in section of another detail of Fig. 1, and Fig. 9 is a plan of one end of a sill, with upright removed.

This case is related in subject matter to my co-pending application for patent, Serial No. 398,765, and embodies some features originally disclosed therein.

Referring to the drawings, 1 represents a sill from which standards 2 rise, each provided with a vertical longitudinal slot 3. The cross ties 4 pass through these slots and are fastened by pins 6 which pass through holes 5 in the standards and cross ties. Braces 7 likewise pinned to the standards, as at 8, support the standards upright, and these standards are hereinafter designated "uprights." Frequently the ground adjacent to the base of the staging or framework is not level or stands at a different elevation

from the bottom. The pivotal connection enables the brace 7 to be fastened upon the ground at whatever elevation and distance is most convenient from the base of uprights 2. The pivotal connection of tie 4 to uprights 2 enables the uprights to be adjusted slightly to make them plumb; and the bottom of each brace 7 can be moved correspondingly. Additional sections 2' may be added vertically to the uprights as represented in the top of Fig. 1, the sections being held together by a single pin as represented and the sections thus added being held upright when the wall has risen to a sufficient height by wire ties 9 which may pass through the wall which is being constructed and be tied to a support on the other side of the wall. When the apparatus is used for building a concrete wall these ties may be fast to the uprights on each side of the wall. When used for building a brick wall, in which the wall is not between the uprights as in the case of concrete, the ties may pass between bricks of the wall and be fast to the floor within the building as indicated in Fig. 2. A convenient fastening is illustrated in Fig. 3 where a windlass bolt 10 is represented in the upright, pierced by a hole 11, the wire being passed through the hole, leaving a little slack between the bolt and the fastening in the building, or the upright. The bolt is rotated by means of a wrench, a crank or other suitable means, winding the wire about the bolt, and drawing the upright toward the building as much as necessary. When plumb, the nut on the bolt may be screwed tight, thus holding it. This is a substitute for methods heretofore used in which it is customary to omit a brick in the wall, occasionally, to insert a stick of timber, and also to insert timbers through windows of the structure. By this improved method the wall is built in complete form without omission of bricks; and the windows are unobstructed and in condition for finishing by workmen while the staging still remains in place. When the staging is taken down the tie wires 9 may be cut close to the wall, the portion of the wire in the wall being left there or being withdrawn at pleasure. Planking may be laid on the cross ties 4 as desired; additional cross ties may be inserted to hold planking; or these ties may be extended outward forming transverse ledger beams as in Fig. 5 and planking



laid outside. When extended they may be held by an additional row of uprights, one of which is indicated in dotted lines in Fig. 5. The tying of the upright 2 to the sill 1 by a pin as shown in Fig. 5 generally renders this third row unnecessary.

One feature of the invention relates to improved planking in which the planks are butted end to end over each ledger beam. As hitherto constructed this would be unsafe; but by the present invention one or more hooks 51 is formed on the under side of each board or plank, projecting beyond the end of the plank. These may be of flat sheet metal and have their ends bent downward to engage the farther side of the ledger beam. A recess or notch 52 is formed in the end of the next adjacent plank, to register with each hook. Each plank may then be put in place or removed independently of its neighbors at each end, and yet it safely overlaps its supporting ledger beam at each end and is prevented by the depending hook 51 from falling off and constitutes a longitudinal bond in the frame. As the end of the plank actually rests upon the ledger beam the weight is transmitted downward primarily without reliance upon the extension. The notches 52 are so narrow that they do not interfere with the general continuity of surface of the planking. By this means the novel feature of a smooth top walk or runway is provided on which materials may be brought and dumped into the mold hereinafter to be described.

Fig. 5 represents the apparatus as it may be used in laying concrete, the wall being formed between the uprights. In this figure the use of the old style of planking is represented, not embodying the feature of the invention last described. Side boards 20 are laid and the concrete is deposited between them. Until supported by concrete they may be retained in place by turn-buckle spreaders 21. When the wall is finished the uprights 2 are lifted from the sills 1, the boards tumble down, and the sills may be pulled from under the wall. While in place, the sills effectually tie together the bottoms of opposite uprights, preventing spreading. The upper parts of the uprights may be tied by wires passed from one upright through the concrete and between the boards to the upright on the other side, and they may be fastened like wires 9 or otherwise. In cases where this apparatus is used for forming a cellar wall or other wall against an embankment, the braces 7 are placed only on the lower side of the wall, the uprights on the opposite side being close against the bank or even being embedded therein. The concrete wall will then be built very close to the bank. When finished, the apparatus on the bank side is taken down by lifting the uprights 2 vertically upward and then by

passing a hook down through the vacant space thus formed, to holes 22 in the outsides of the boards, thus lifting them. The sills may be drawn out horizontally on the lower side. Each sill is notched as at 41 and the upright 2 has a prong projecting into and filling each notch. The exterior dimensions of the sill, in cross section, are elsewhere uniform throughout its length, and therefore the hardening of the concrete does not prevent the withdrawal of the sill endwise. If preferred, the sill may be tapered a little from the side on which it is to be withdrawn. This is seen in Fig. 5 where the sill appears to taper very slightly from its remote end toward its near end.

The apparatus can be used repeatedly, thus saving over the methods heretofore used in which the woodwork is splintered or destroyed in taking it down. Very little excavation is needed on the bank side of the wall, thus saving cost in that respect also. The boards 20 may be provided with any desired faces, plain or matrix, to give surface form to the concrete. When in use each upright is tied to its sill by engagement in the notch in the sill, about which it can swing a little, from which it can be removed by lifting, but in which it can move neither outward nor inward while in place; and it may be held down by pins 6, if desired. Diagonal or horizontal ties and braces 35 may be employed between the uprights, if needed, and these also may be fastened with bolts, passing through the slots 3.

Another feature of the invention relates to the manner of supporting the face forms for the work, in contact with which the wall which is being constructed is built. These are illustrated as used in connection with the concrete construction and embody a gang system and means for easy adjustment thereof to different elevations and to different angles from the vertical. At each upright is provided a section of timber 60 which stands vertical or nearly so and which is supported from the upright by means of bolts 61 and straps 62 and which constitutes a secondary upright and in turn supports a facing 63 for the work. This facing may consist of boards nailed upon the timbers 60 and extending from one upright to its nearest adjacent upright on the same side of the work; and the total width of the boards 63 in a vertical direction may be the total amount which it is desirable to construct at one setting of concrete. This face form is adjustable to different elevations by raising the straps 62 upon the uprights to the desired place where they are held by pins or any other suitable or desired manner. The face form is adjustable to different angles from the vertical by means of its supporting bolts 61. These have a portion 64 which is



screw threaded through the strap 62 and another portion 65 which is screw threaded into a horizontal pivot 66 set in the timber 60, the two threads being in opposite directions. Upon twisting the bolt 61 by means of a wrench or otherwise, it is propelled through the strap 62 in one direction and at the same time moves the pivot 66 and timber 60 in the opposite direction. In operation the straps 62 are raised so that the lower part of face form 63 is at the desired elevation and the lower bolt 61 sets it laterally at the position of the desired face of the mold. Then the upper bolt 61 is adjusted until the face form 63 stands plumb or at such angular variation from a plumb position as is required, in case the wall is being built with an inclined face. This adjustment is possible because the connection between bolt 61 and timber 60 is pivotal, the bolt being screw threaded transversely through the cylindrical pivot 66. To raise the apparatus past one of the joints between an upright and its next higher sectional upright, either bolt 61 may be withdrawn by unscrewing it, the portion 65 being smaller in diameter than portion 64 so that it will pass through the screw hole of 64. The straps 62 are preferably made in shape to lap around both sides of the upright as shown clearly in the plan view, (Fig. 8) so that they slide up and down readily thereon with no danger of falling off and so that they may exert either a push or a pull upon the timber 60. By this arrangement all the boards which are to form the face of the mold for a section of considerable vertical depth are fastened together in a gang and are adjusted in this gang arrangement, one adjustment serving for the whole gang. When ready for the next higher setting the entire gang is raised and set at once. If desired, two or more gangs may be worked above each other on the same uprights, the lower one being retained in place as long as necessary for hardening of the concrete, while one or more gangs are set above it. The repeated use of boards in this manner is a measure of great economy as compared with the now prevalent method of nailing the mold in place with the accompanying waste of lumber which it involves.

Another feature of the invention relates to the formation of the interior face of the mold in cases where the wall is to have a hollow space. To form such a hollow I provide a core composed of three pieces marked respectively 70, in the middle, and 71 and 72 at each side of it. In a wall eighteen inches thick if it is desired to make a central hollow space of six inches thickness, this may be effected by providing planking as shown, the central one being tapering downward and the inner sides of the other two being tapering upward to fit it, the whole present-

ing a rectangular exterior. When the concrete is set sufficiently, the central one may be drawn upward easily after which those on each side can easily be removed. In such a wall it is desirable to tie the two sections of the wall together periodically. This may be accomplished by setting bricks across, bridging the hollow, after the core has been withdrawn, and then continuing the up-building. In such cases the lower edges of the planks should be notched to receive the thickness of the bricks, as seen in Fig. 1 at the lower corner of the plank under the reference numeral 72, where the brick is seen occupying a notch in the corner of the plank. When the core planks are not supported on tie-bricks or the equivalent thereof they are sustained from the ledger board 4, by cords passing through eye-bolts 73, the cords being omitted in the drawing for the sake of clearness.

It will be understood that the combination bonding platform composed of boards 50 and their hooks 51 may be placed anywhere on the ledger boards 4, although illustrated only on one outer side thereof, and in particular it may be placed between the two uprights, or a single line of boards may be placed there affording convenient facilities for dumping concrete material into the mold.

When the gang arrangement of boards to form the outer face of the mold is used, it is desirable that the boards be put together with matched joints as shown in Figs. 1 and 4 and it is of particular advantage to bevel the outside of each board at the top downward from its joint with the board above it as at 67. There is a tendency for water to enter cracks between boards such as this, causing swelling and causing other troubles. The enlarged opening thus formed at the outer edge of this crack prevents trouble from this source, the water running off instead of running in.

I claim:

1. Apparatus of the class described, including in combination uprights, a facing for work and connections therefrom to the uprights comprising screws on said uprights supporting the said facing at adjustable distances from said uprights; said screws being threaded oppositely on the uprights and on the facing, and having ends projecting through the uprights and provided with heads by which the screws may be rotated.

2. Apparatus of the class described, including in combination uprights, a facing for work, and connections therefrom to the uprights comprising screws on said uprights supporting the said facing at adjustable distances from said uprights; said screws being threaded oppositely on the uprights and on the facing; the diameter threaded in the latter being smaller than the clear space



through the screw hole in the former, whereby the screw is removable therethrough.

3. Apparatus of the class described, including in combination uprights, straps sliding thereon, means to hold them at various elevations thereon, a facing for work, and horizontal pieces, independently adjustable in length, connecting the top and the bottom of said facing to the straps, whereby the inclination of the facing may be adjusted, said connecting pieces being hinged to the facing about horizontal axes.

4. Apparatus of the class described, including in combination uprights, a facing

for work, and connections therefrom to the uprights comprising screws projecting from the uprights and supporting the facing at adjustable distances therefrom; there being horizontal pivots in the facing which the said screws pierce laterally.

In testimony whereof I hereto affix my signature, in presence of two witnesses, this third day of June, 1908.

JAMES DAISLEY.

Witnesses:

EVERETT E. KENT,  
E. D. CHADWICK.