No. 840,636. PATENTED JAN. 8, 1907.

C. E. LILLOW

SCAFFOLD.

APPLICATION FILED NOV. 3, 1905.

3 SHEETS—SHEET 1.

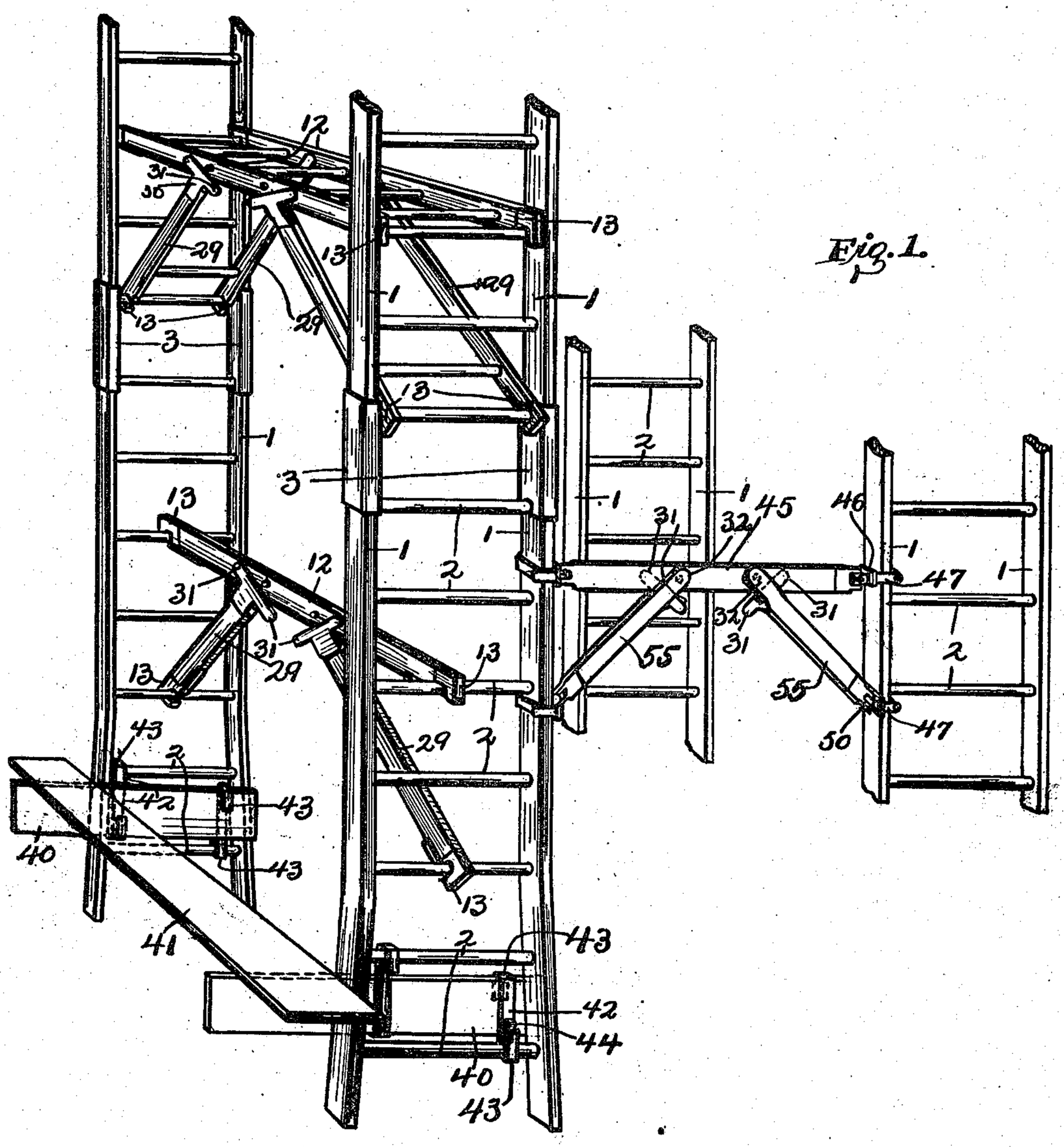


Fig. 1.

WITNESSES:

Daniel E. Daly.

N. M. Donnell.

INVENTOR

Charles E. Lillow

BY

Lynch & Lowe

ATTORNEYS

No. 840,636. PATENTED JAN. 8, 1907.

C. E. LILLOW.

SCAFFOLD.

APPLICATION FILED NOV. 3, 1905.

3 SHEETS—SHEET 2.

Fig. 2.

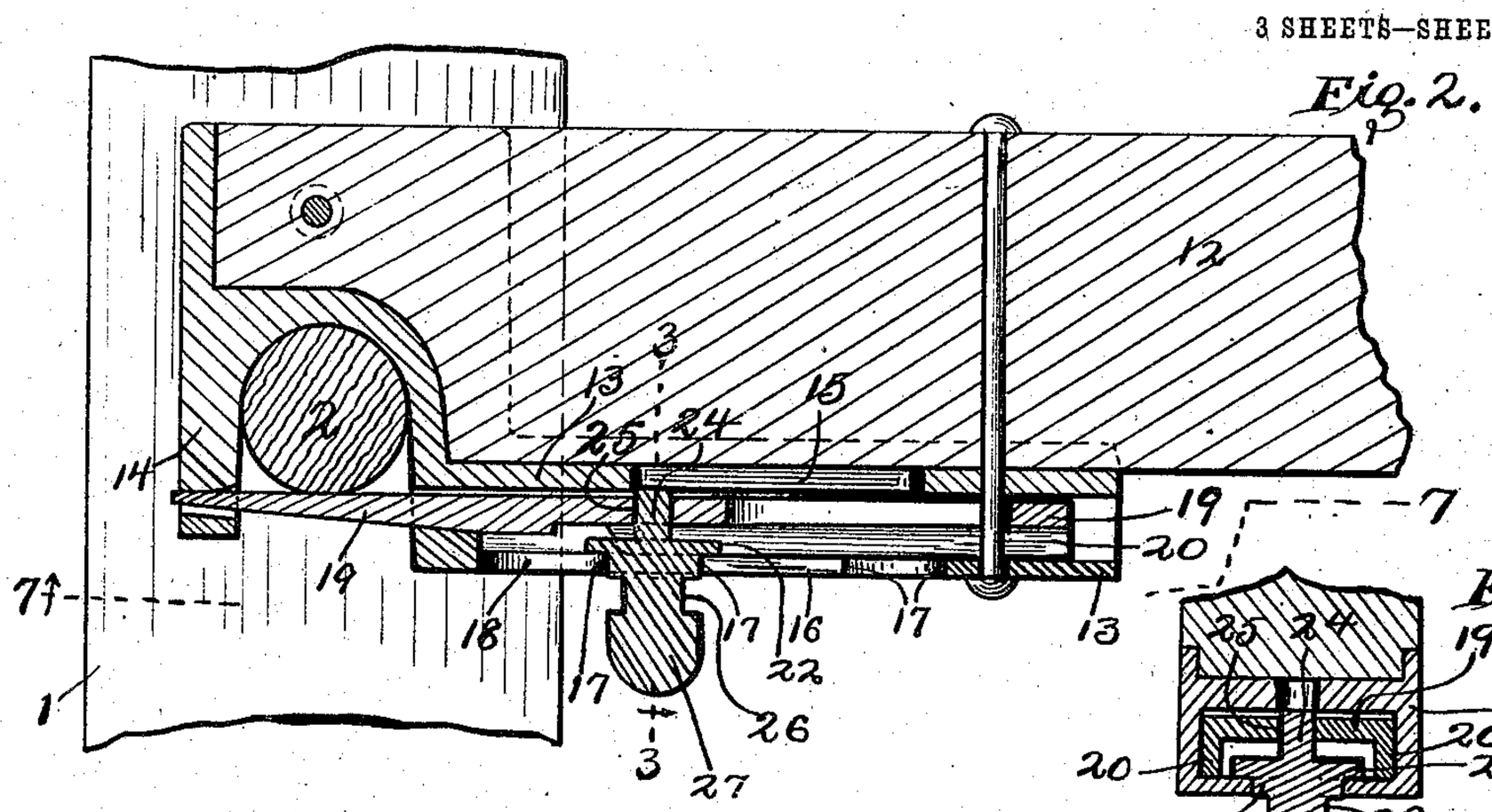


Fig. 3.

Fig. 4.

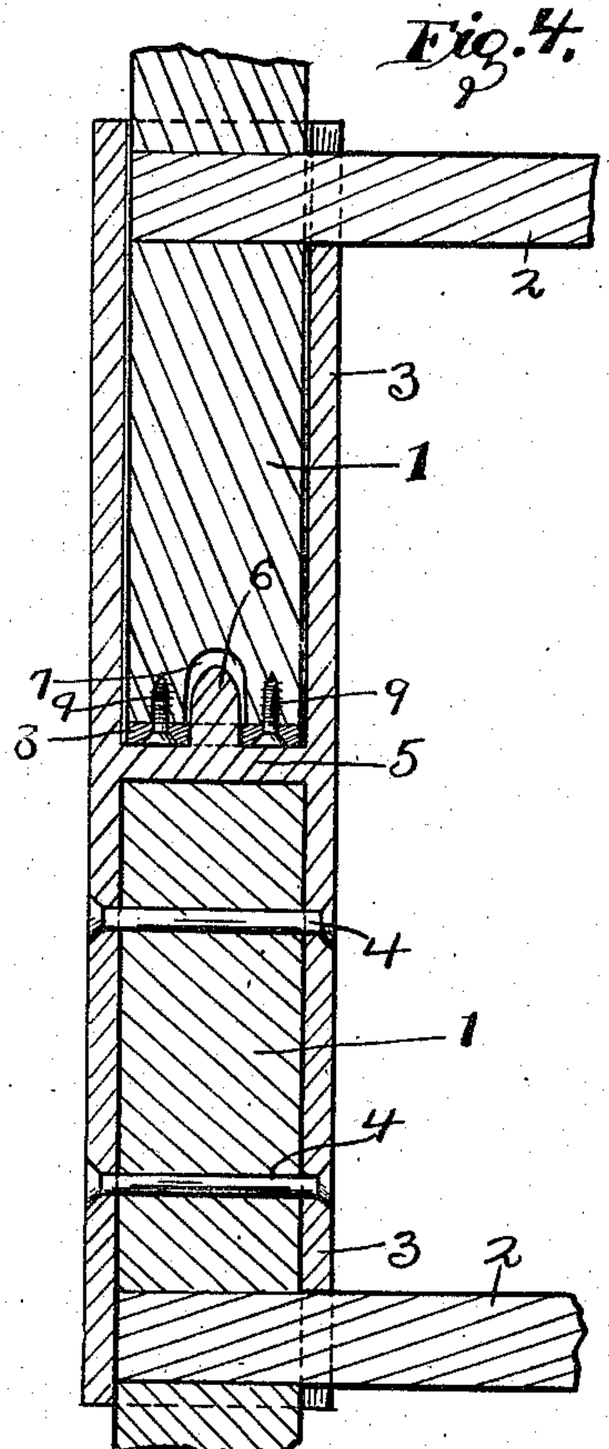


Fig. 5.

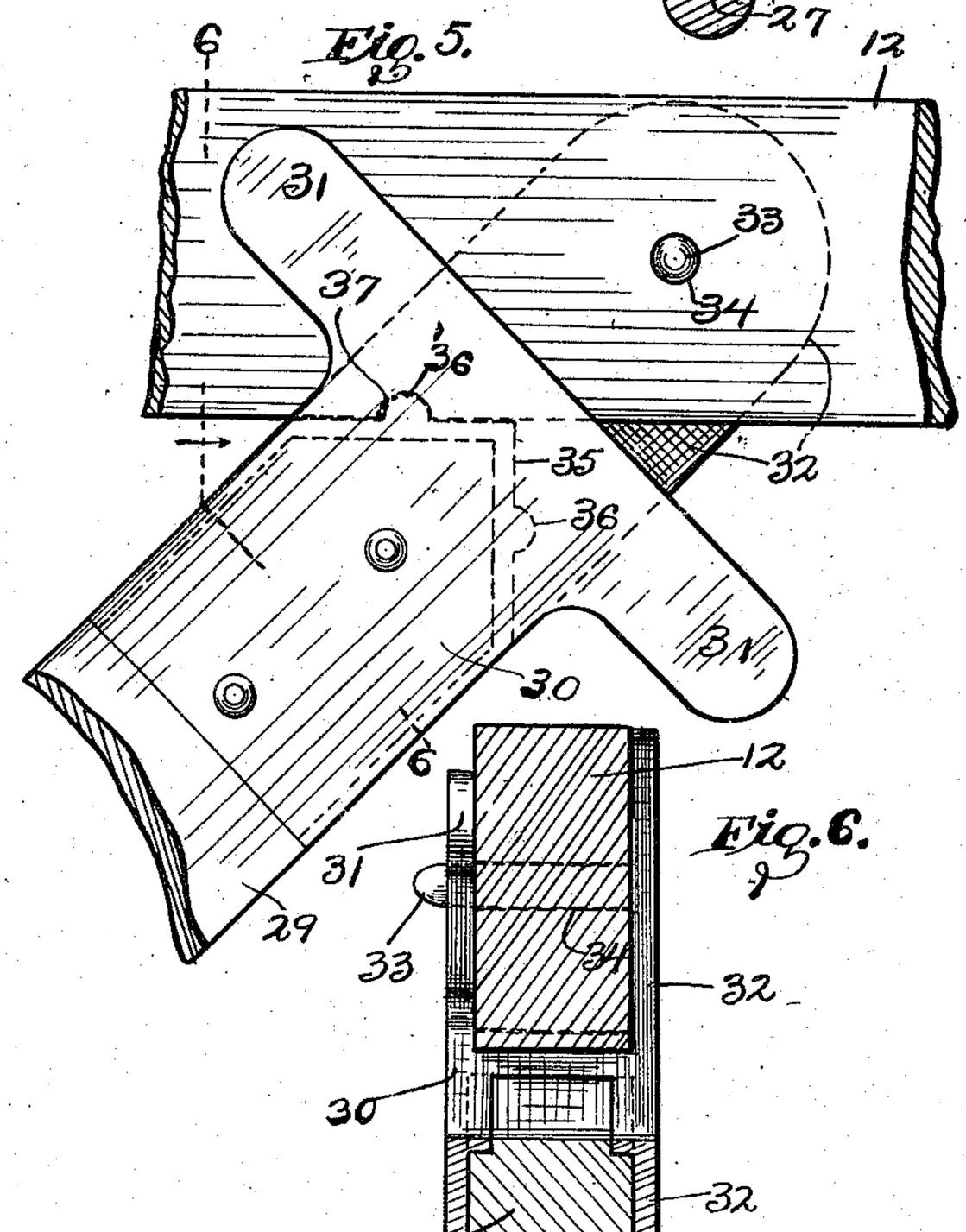


Fig. 6.

WITNESSES:

Harold E. Haby.

N. McDonnell

INVENTOR

Charles E. Lillow

BY

Lynch & Lorer

ATTORNEYS.

No. 840,636. PATENTED JAN. 8, 1907.

C. E. LILLOW.

SCAFFOLD.

APPLICATION FILED NOV. 3, 1905.

3 SHEETS—SHEET 2.

Fig. 1.

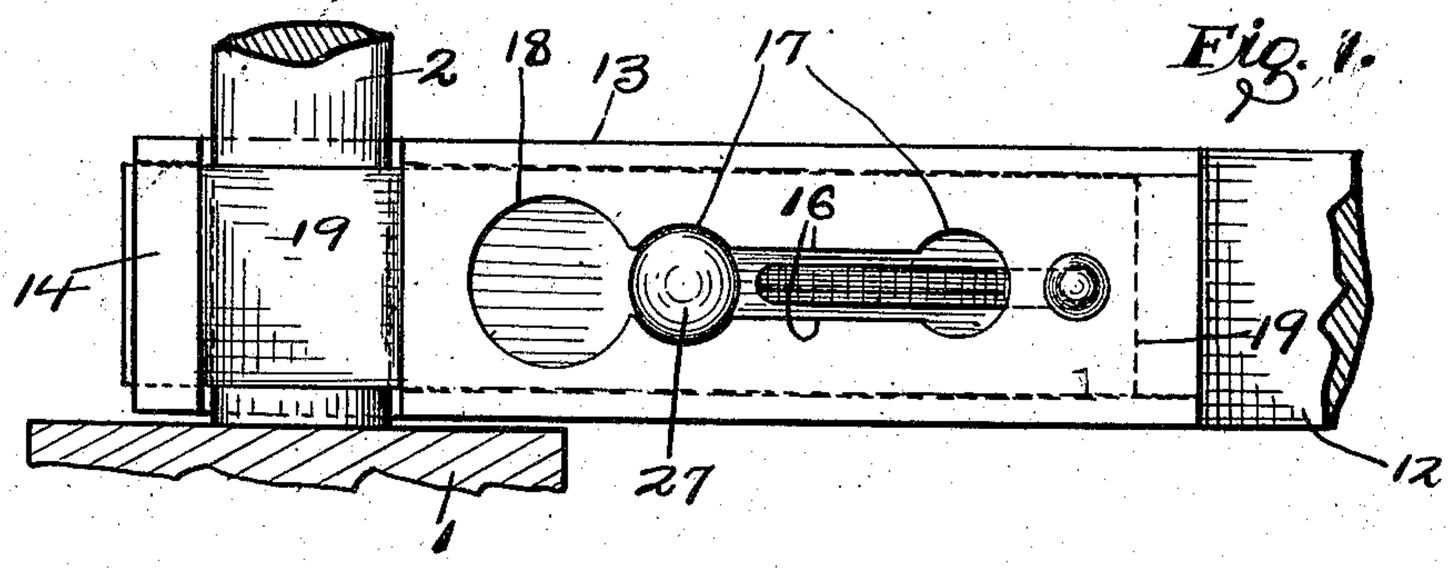


Fig. 8.

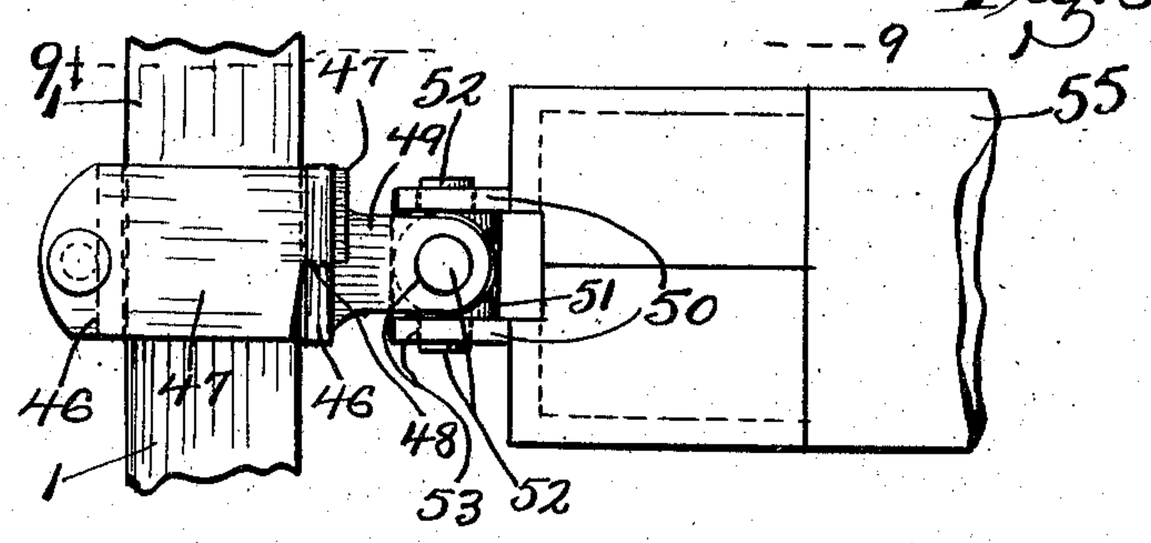
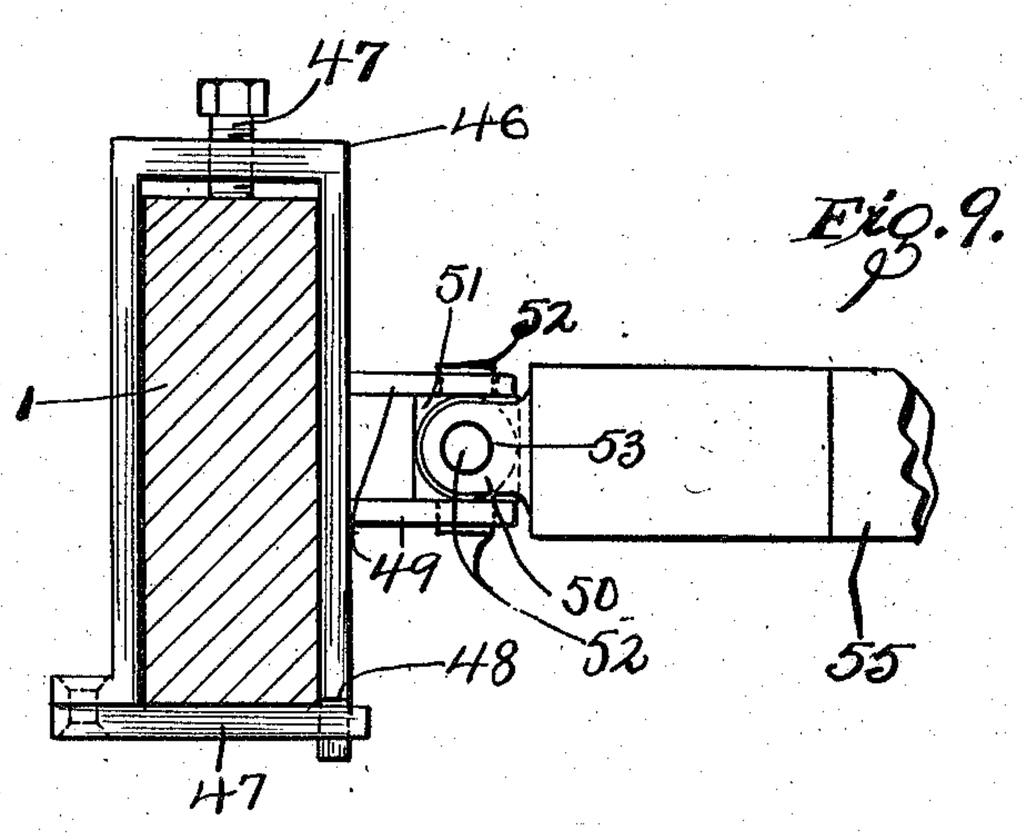


Fig. 9.



WITNESSES:

David E. Daly.

N. McDonnell.

INVENTOR

Charles E. Lillow

BY

Lynch & Lowe.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES E. LILLOW, OF CLEVELAND, OHIO, ASSIGNOR TO THE CLEVELAND LADDER-SCAFFOLD COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

SCAFFOLD.

No. 840,636. Specification of Letters Patent. Patented Jan. 8, 1907.

Application filed November 3, 1905. Serial No. 285,711.

To all whom it may concern:

Be it known that I, CHARLES E. LILLOW, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Scaffolds; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

This invention relates to improvements in sectional scaffolds.

The object of this invention is to provide a scaffold of this character which will be strong, light, and easily assembled and having each section arranged to interlock with one or more of the other sections, thereby securing rigid joints without the use of nails or bolts.

My invention therefore consists in the features of construction and combination of parts, as described in the specification, pointed out in the claims, and illustrated in the accompanying drawings.

In the accompanying drawings, Figure 1 represents a section of a scaffold embodying my invention. Fig. 2 is a detail sectional view illustrating the locking device, which secures the horizontal sections to the rungs of the vertical sections. Fig. 3 is a section on line 3 3, Fig. 2. Fig. 4 is a detail sectional view showing the means for securing one vertical section of the scaffold to the vertical section next below. Fig. 5 is an enlarged view showing method of securing a brace-bar in position. Fig. 6 is a section on line 6 6, Fig. 5. Fig. 7 is a section on line 7 7, Fig. 2. Fig. 8 is a side view of one of the universal joint connections which secures the stay-bars of the links in position. Fig. 9 is a top plan of the same.

By referring to the drawings, it will be seen that the scaffold comprises two or more series of vertical sections, each series being capable of being indefinitely lengthened by the superposition of additional sections, and a number of horizontal sections, which serve either as side extensions, stages, brace-bars, or connecting-links. The series of vertical extensions are preferably secured together in pairs by the brace-bars, and the pairs are secured together by the connecting-links.

The vertical sections are similar in construction to an ordinary ladder and consist of side pieces 1, which are permanently secured together by cross bars or rungs 2. The vertical sections which constitute a series are detachably secured together by means of sleeves 3, which are arranged to receive the upper ends of the side pieces 1 of a lower section and the lower ends of the side pieces 1 of an upper section. The sleeves 3 are preferably permanently secured to the upper ends of the side pieces of the respective sections by bolts 4. Walls 5 are arranged in the sleeves 3 between the ends of the side pieces, and on the upper surfaces of said walls are arranged lugs 6, which extend into sockets 7, formed in the ends of the side pieces of the upper section. The object of the lugs and sockets is to center the ends in the sleeves and prevent them from moving in case they are somewhat smaller than the interior dimensions of the sleeves. Guard-plates 8 are preferably secured around the sockets by means of screws 9.

At suitable places between the vertical sections are arranged the horizontal sections which form the brace-bars, each of which consists of a bar 12, on the ends of which are secured clamping devices for detachably engaging the cross bars or rungs 2 of the vertical sections. Each of the clamping devices comprises a hollow body portion 13 and a yoke portion 14, which is arranged to fit over a rung 2. In the top of the body portion is formed a groove or slot 15, and in the bottom of the body portion is formed a longer slot 16, having two enlargements 17 of the same diameter and one enlargement 18 of greater diameter than the other two. In the hollow body portion is arranged a wedge-shaped plate 19, so as to slide freely therein, and the said plate 19 is held above the bottom of the body portion by supports 20, so that there is a space between the lower surface of the plate 19 and the upper surface of the bottom of the body portion 13. The plate 19 is of sufficient length so that when it is moved forward in the body portion it will close the bottom of the yoke 14 and cause it to tightly embrace the rung of the ladder. A locking-bolt is provided for holding the plate 19 in either its forward or backward position, and the said bolt comprises a body portion 21, which has a diameter equal to the diameters of the enlargements 17; and on the body

portion is arranged an annular shoulder or flange 22, which prevents the body portion from slipping through the said enlargements 17; but the said flange is smaller in diameter than the enlargement 18, so that the bolt may be inserted through said enlargement 18. The body portion 21 is provided with a stud 24, which extends into an opening 25, formed in the slide 19. On the body portion is formed a neck portion 26, which is smaller in diameter than the width of the slot 16. A knob 27 is preferably secured to the body portion 21 of the bolt. The body portion 13 is secured to the bar 12 by a rivet, which passes through a slot in the plate 19, and thereby limits the forward movement of the said plate, so that the bolt will not drop through the enlargement 18.

The operation of the device is as follows: The upper part of the bolt is passed through the enlargement 18, and the stud 24 is inserted in the opening 25 in the plate 19. When it is desired to move the plate 19 back or forth, the bolt is shoved up, so that the stud 24 projects into the slot 15, and the neck portion enters the slot 16, and when it is desired to lock the slide either in its backward or forward position the bolt will be over one of the enlargements 17 and will therefore drop by its own weight, and the body portion will enter one of the said enlargements, thereby preventing any movement of the plate 19 until the body portion is lifted out of said enlargement. In this way a very reliable locking device is provided, for when the plate is in the proper position it will be automatically locked by the action of gravity on the bolt, and no shaking or jarring of the scaffold can cause the bolt to come unfastened. Stay-bars 29 are provided for reinforcing the brace-bars, and the lower ends thereof are secured to the rungs of the vertical sections by clamping devices similar to the clamping devices arranged on the ends of the brace-bars, and the upper ends of the stay-bars 29 are secured to the brace-bars by hangers, each of which consists of a plate 30, having ears 31, which project from each side at the upper end thereof, and a plate 32, which extends a little distance beyond the end of the stay-bar.

Near the end of the plate 32 is arranged a pin 33, which passes through a hole 34, formed in the brace-bar, and the location of the pin on the plate 32 and the hole in the brace-bar are such that the end of the plate 30 will clear the lower edge of the brace-bar when the stay-bar is hanging in a vertical position; but when the stay-bar is moved into an angular position, so as to secure the lower end thereof to one of the rungs 2, then one of the ears 31 on the plate 30 will move up and extend across the side of the brace-bar, and therefore the pin 33 cannot be withdrawn from the hole 34 as long as the stay-bar is in an inclined position, and the ear 31 and the end of the plate 32 will then form a fork, which closely embraces the brace-bar and prevents it from turning or shaking. An angular-shaped cap 35 is preferably arranged on the end of the stay-bar 29 between the plates 30 and 32, and one face thereof abuts against the lower surface of the brace-bar when the stay-bar is in its operative position, thereby providing a rest or support near the center of the brace-bar. Ridges 36 are formed on the cap 35 and enter grooves 37 in the under surface of the brace-bar, which prevent the cap from slipping and take practically all the strain off of the pin 33. To the vertical sections are secured side extensions, which comprise supporting-bars 40 and a platform 41, which extends between and rests on the said supporting-bar 40 Each supporting-bar is secured to the vertical section by means of links 42, having a hook 43 at each end. One of said links is arranged at the inner end of the supporting-bar, so that the hook on the upper end thereof engages the supporting-bar 40, and the hook on the lower end engages a rung 2 below the supporting-bar, and the other link is arranged nearer the outer end of the supporting-bar, and the hook on the upper end thereof is arranged to engage the rung above the supporting-bar, and the hook on the lower end is arranged to engage with the supporting-bar. A guard 44 is pivotally secured to the links, so as to close the mouth of the hooks which engage the rungs.

The pairs of vertical sections are secured together by link-bars 45, which are secured to the side pieces 1 of the vertical sections by means of universal joints, which are constructed as follows: Around the side piece 1 is arranged a U-shaped strap 46, and at one end thereof is pivotally secured a latch 47, the end of which enters a groove 48 in the opposite end of the U-shaped strap 46. A clamping-screw 47 is arranged in the strap 46 opposite the latch, by means of which the strap can be secured to the side pieces 1. On the strap are arranged two ears 49, and on the end of the link-bar 45 are arranged two ears 50, the ears on the bar being arranged at a right angle to the ears on the strap. Between the ears is arranged a block 51, provided with two pairs of arms 52, arranged at a right angle to each other, and which extend into bearings 53, formed in the respective ears. The connecting-links are provided with stay-bars 55, and the upper ends of these stay-bars are secured to the connecting-links by hangers similar to the hangers used for connecting the stay-bars 29 with the brace-bars 12, and the lower ends of these stay-bars 55 are connected with the side pieces 1 by devices similar to the devices used for connecting the connecting-links 45 with the side pieces 1. This means of coup-

ling the vertical sections allows them to be connected at any angle, either vertical or horizontal.

What I claim is—

1. In a scaffold, the combination of a series of vertical sections, each section comprising vertically-arranged side pieces secured together by cross-bars and means for securing said vertical sections together, consisting of sleeves arranged to receive the upper ends of the side pieces of a lower vertical section and the lower end of the side pieces of an upper vertical section, walls arranged in said sleeves and lugs formed on said walls and arranged to enter the ends of the side pieces of one of the vertical sections.

2. In a scaffold, the combination of a series of vertical sections, each of said sections consisting of vertically-arranged side pieces secured together by cross-bars and means for securing said vertical sections together consisting of sleeves arranged to receive the upper ends of the side pieces of a lower section and the lower ends of the side pieces of an upper section, walls arranged in said sleeves, lugs formed on the upper surfaces of said walls and arranged to enter the lower ends of the side pieces of the upper section and means for permanently securing said sleeves to the side pieces of the lower sections.

3. In a scaffold, the combination of a series of vertical sections, each section consisting of two vertically-arranged side pieces secured together by cross-bars, and means for bracing two of said vertical sections together comprising a yoke portion, a hollow body portion having a slot in the bottom with two enlargements of the same size, a plate arranged to slide in said hollow body portion and a latch for locking said plate in said body portion, said latch consisting of a body portion approximately equal in size to the enlargements in the said slot, a neck portion arranged to enter the said slot, a flange arranged on the body portion and a stud secured to said body portion and arranged to enter an opening in the said plate and the arrangement is such that when the said plate is in its innermost or outermost position the said latch will drop of its own weight into one of the said enlargements in the said slot and thereby lock the plate against movement.

4. In a scaffold, the combination of a series of vertical sections and means for bracing said sections together comprising a brace-bar, means for securing the ends of said brace-bar to the vertical sections and stay-bars for reinforcing said brace-bars, said stay-bars being provided with hangers for securing them to the brace-bars, each hanger comprising a plate arranged at one side of a stay-bar and provided with two projecting ears and a plate arranged at the opposite side of the stay-bar and extending above the first-mentioned plate, means for securing said last-mentioned plate to the brace-bar and the arrangement is such that when the said stay-bar is in a vertical position the ears on the first-mentioned plate will lie below said brace-bar and when the stay-bar is moved to an inclined position one of said ears will extend along one side of said brace-bar and means for securing the lower ends of the stay-bars to the vertical sections.

5. In a scaffold, the combination of vertical sections, means for securing said vertical sections in pairs and means for connecting the pairs of vertical sections, said means comprising a link, means arranged to engage the vertical sections and universal joints arranged between the ends of the link and the means for engaging the vertical sections.

6. In a scaffold, the combination of vertical sections, each of said sections comprising vertical side pieces secured together by cross-bars, means for connecting the vertical sections in pairs, and means for connecting the pairs of vertical sections together, said means comprising U-shaped straps arranged to embrace the side pieces of the vertical section, latches arranged to close the open ends of the said straps, a clamping-screw arranged in each strap opposite the latch, a link and universal joints connecting the ends of said link and said straps.

In testimony whereof I sign the foregoing specification in the presence of two witnesses.

CHARLES E. LILLOW.

Witnesses:
VICTOR C. LYNCH,
N. L. MCDONNELL.