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APPLICATION FILED JAN. 28, 1911.

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2 SHEETS—SHEET 1.



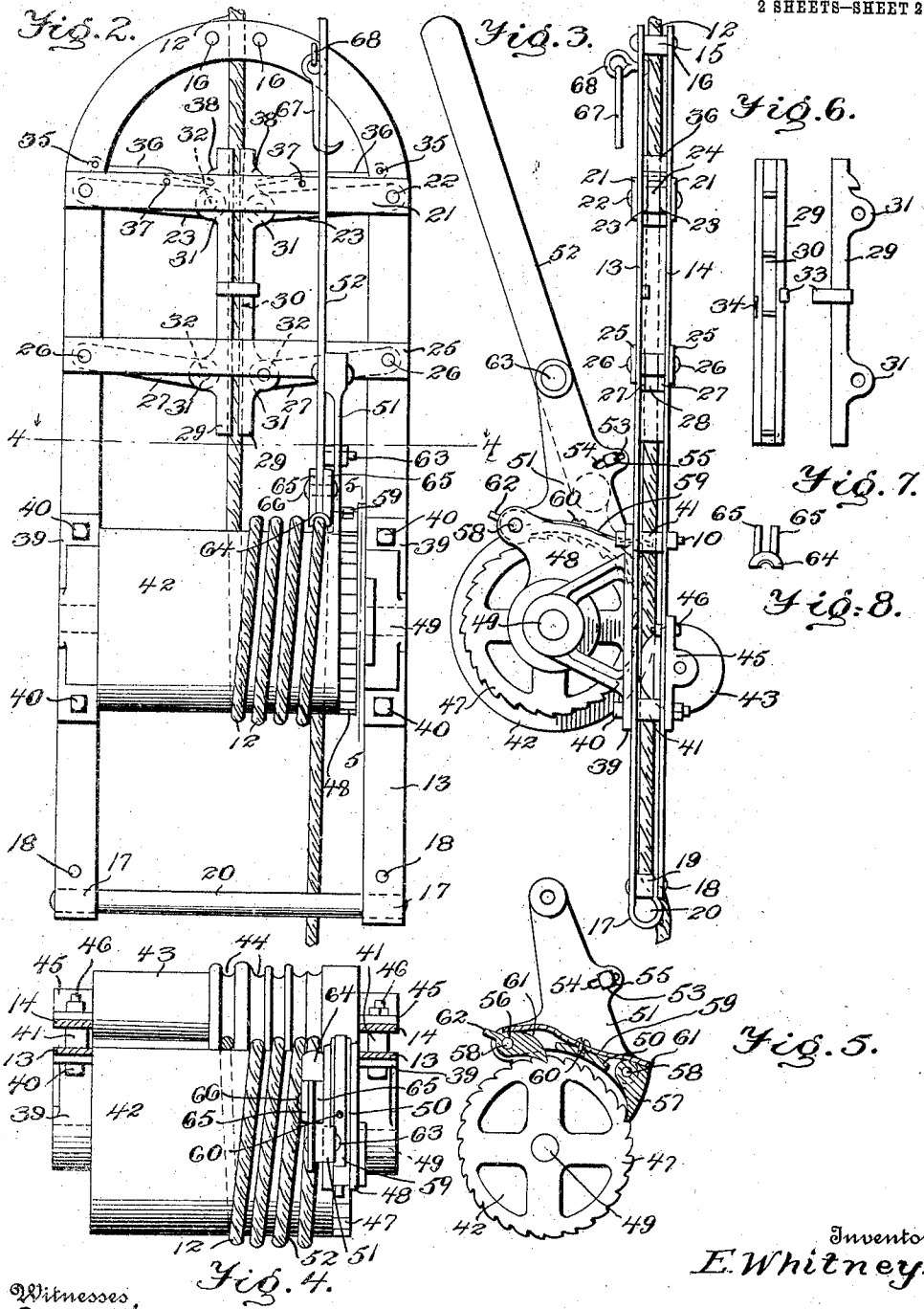
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UNITED STATES PATENT OFFICE.

EGBERT WHITNEY, OF OMAHA, NEBRASKA.

SCAFFOLD.

998,270.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EGBERT WHITNEY, citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Scaffolds, of which the following is a specification.

This invention relates to an improved scaffold for use in the erection of buildings of stone, brick, cement and the like, and especially to that class of buildings which are known as steel or reinforced buildings wherein it is the custom to form the outer walls from an outside scaffold.

Heretofore it has been the custom to erect temporary scaffolds upon timbers projected from windows or other orifices through the walls of the building, or to hang temporary scaffolds from depending members supported upon the upper edge of the frame or walls being constructed. This class of scaffolds necessitates the knocking down of the same and the reerection of the scaffold every five or six feet of the entire height of the wall during its erection. Scaffolds have also been used which employ drums about which are wound cables depending from an overhanging beam supported at the top of the steel frame of the building. In raising the scaffold the cable is wound about the drum taking up considerable space as it nears the top of the building and increasing the size of the drum, the latter necessitating a corresponding increase in the power for turning the drum when raising a given load.

An object of this invention is to provide a scaffold which overcomes the above objections and which may be raised or lowered at will against the wall being erected or the steel frame of the building.

The invention contemplates a scaffold which is hung upon a pair of outwardly projecting timbers disposed upon the top of the frame of the building by means of cables which extend down from the timbers toward the ground. The scaffold is provided with an improved mechanism through which the cables pass in order to raise or lower the scaffold.

The improved scaffold is further provided with a double check or braking mechanism engaging with the cable to insure the safety of the workmen when operating the scaffold and while working upon the wall.

For a full understanding of the invention and the merits thereof and also to acquire a

knowledge of the details of construction, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a detail perspective view of the improved scaffold as applied to the outer wall of a building; Fig. 2 is a front elevation of one of the hoisting frames detached from the scaffold; Fig. 3 is an edge view of the same; Fig. 4 is a section on the line 4—4 looking in the direction of the arrows; Fig. 5 is a transverse section on the line 5—5 of Fig. 2; Fig. 6 is an inner face view of one of the clutches employed; Fig. 7 is a side elevation of the same; and, Fig. 8 is an end view of the brake shoe employed in connection with the drum.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawing by the same reference characters.

Referring to the drawings, particularly to Fig. 1, the improved scaffold is disclosed as being hung against a building 10. A pair of supporting beams 11 are secured upon the top of the building 10 and have their outer ends projecting beyond the side thereof to carry depending cables 12 upon which the scaffold is supported.

The scaffold is formed with a supporting frame at each corner thereof receiving the adjacent depending cable 12, and being provided with novel means hereinafter set forth, for moving the frame upon the cable to vertically adjust the scaffold. The supporting frames are of like structure, each one of which comprises a pair of companion bars 13 and 14 curved edgewise into inverted U-form. The bars 13 and 14 are spaced apart at their upper closed ends by transversely spaced rollers 15 supported upon rivets 16 passing transversely through the bars and being headed against the outer faces thereof. The cable 12 passes down between the bars 13 and 14, and between the rollers 15 which center the cable in the upper end of the frame. The lower ends of the bars 13 are curved back and up providing loops 17, the upper ends of which rest against the inner faces of the lower ends of the bar 14. Rivets 18 pass through the lower ends of the bar 14, the upturned ends of the loops 17, and the bar 13 to bind the same together, the bars being spaced apart by sleeves 19 carried about the rivets 18. A supporting rod 20 is fitted at its ends in the loops 17,

and is headed at its extremities to engage against the outer edges of the loops 17 to hold the rod 20 from longitudinal displacement.

5 The upper end of the frame is provided with a pair of companion cross braces 21 secured at their ends across the outer faces of the bars 13 and 14 by rivets 22 passing through the same. Upper links 23 are
10 hinged at their outer ends between the bars 13 and 14 upon the rivets 22, the links 23 being disposed in pairs and being spaced apart by collars 24 carried upon the rivets 22. Lower companion braces 25 are secured
15 across the opposite sides of the main frame by transverse rivets 26 passing through the braces 25 and the bars 13 and 14. Lower links 27 are hinged at their outer ends between the bars 13 and 14 upon the rivets
20 26, the links 27 being disposed in pairs and being spaced apart by collars 28 carried upon the rivets 26. A pair of vertical clutch members 29 are carried upon the inner
25 ends of the links 23 and 27 and are formed with longitudinal grooves 30 in their inner opposite faces, and are provided with outwardly extending ears 31 adjacent to their opposite ends fitting between each pair of the links 23 and 27. Pins 32 pivotally
30 connect the ears 31 to the links so as to effect the parallel movement of the clutch members 29. Each of the clutch members 29 is provided with a lateral guide 33, the same being disposed at the opposite sides of
35 the clutches, for engagement in a registering transverse groove 34 formed in the opposite side of the opposite clutch and adapted to hold the clutches in registration with one another.

40 Transverse pins 35 are carried between the bars 13 and 14 and support the outer ends of a pair of leaf springs 36 which are turned up at their ends to engage about the pins 35 to prevent the displacement of the springs
45 36. The springs 36 extend in toward the clutch members 29 and pass over stops 37 carried across the upper braces 21. Lips 38 project outwardly from the clutch members 29 above the upper ears 31 and form shoulders for the reception of the inner ends of
50 the leaf springs 36 to hold the clutch members 29 normally up.

The frame is provided midway of its ends, and against the bar 13, with a pair of
55 transversely registering brackets 39 held thereon by bolts 40. The bolts 40 pass through the bars 13 and 14 and carry thereabout spacing sleeves 41 to insure the rigidity of the brackets 39 upon the frame. The
60 drum 42 is carried by the frame and has its trunnions journaled in the outer ends of the brackets 39, and receives thereover the cable 12. The brackets 39 carry the drum
65 cable 12 passes in a straight line up from the

drum 42 between the clutch members 29 to prevent the binding of the cable against the lower ends of the same.

As is disclosed in Figs. 2 and 4, the cable 12 is wound about the drum with but four 70 complete turns when it passes down and out of one side of the frame. To insure the gripping of the cable 12 about the drum 42, a friction roller 43 is employed, the same engaging adjustably against the periphery 75 of the drum 42 and provided with a series of grooves 44 snugly receiving the convolutions of the cable. The roller 43 is journaled in brackets 45 which are secured at their lower ends against the outer face of
80 the bar 14 by the lower bolts 40, and are held against the bar 14 at their upper ends by short bolts 46. The brackets 45 are slotted longitudinally at their ends to receive the bolts 40 and 46 and to admit of the
85 adjustment of the brackets 45 longitudinally upon the frame to move the roller 43 toward and from the drum 42.

One end of the drum 42 is provided with a fixed ratchet 47, by means of which the drum 90 is actuated. The drum 42 carries a segment 48 upon one of its trunnions, as at 49, against the outer side of the ratchet 47, the segment 48 having an offset web 50 overhanging the ratchet 47. A supporting arm 95 51 projects up from the inner edge of the web 50 and hingedly supports a hand lever 52. The arm 51 is provided midway of its ends, and at its inner edge, with a projection 53 formed with a longitudinal slot 54 in
100 which is adjustably positioned a stop-bolt 55. The stop-bolt 55 projects into the slot of the lever 52 and engages therewith when the lever 52 is swung out from the frame, and is employed for the purpose of communicating the movement of the lever 52
105 to the segment 48 when it is desired to swing the segment out from the frame.

The web 50 is relatively narrow to accommodate pawls 56 and 57 hinged upon pins 110 58 carried through the lower corners of the arm 51 and the upper corners of the segment 48. A leaf spring 59 is secured midway of its ends by a screw 60 upon the web 50 and has its opposite extremities resting
115 against the pawls 56 and 57. The pawls 56 and 57 are provided with shoulders 61 determining flat faces arranged at angles upon the pawls and against which the ends of the springs 59 rest when the pawls are
120 turned into or out of operation. The pawl 56 carries an outwardly projecting lug 62 by means of which the pawl is raised out of engagement with the ratchet 47. The hand lever 52 is hinged adjacent to its lower
125 end upon the upper extremity of the arm 51 by a rivet 63. The lower end of the hand lever 52 terminates a short distance above the drum 42 and pivotally carries upon its lower end a brake shoe 64. As is 130

disclosed to advantage in Fig. 8, the shoe 64 is of arcuate form and is provided with a semicircular groove in its lower face to receive and to bind against the adjacent lap of the cable 12. The shoe 64 is provided with spaced upstanding lugs 65 receiving therebetween the lower end of the hand lever 52. The lugs 65 are hinged upon the lever 52 by a rivet or pin 66. The lugs 65 are of such length that when the lever 52 is swung up against the adjacent bar 13 of the frame, the shoe 64 binds tightly against the cable 12 and holds the cable and the drum from movement. The bar 13 carries a hook 67 mounted upon a swivel-eye 68 carried upon the bar 13 in registration with the hand lever 42. The hook 67 is adapted to engage and hold the lever against the frame in a locked position.

In the erection of the scaffold the above described frames are arranged in pairs, the frames facing one another so as to dispose the hand levers 52 convenient to the hand of the operators, as shown in Fig. 1. End beams 69, of considerable thickness, are positioned across the supporting rods 20 of each pair of frames. The floor or body of the scaffold comprises a number of longitudinal beams 70 arranged longitudinally across the end beams 69 upon which they are supported.

In raising the scaffold the levers 52 are released from the hooks 67 and swung out from the frames. This movement of each of the levers raises the adjacent brake shoe 64 from the cable 12 and draws the segment 48 around to move the pawls 56 and 57 over the teeth of the ratchet 47. In moving the segment 48 the lower end of the hand lever 52 strikes the stop-bolt 55 and limits the outward swinging of the hand lever 52 about the pin 66. The weight of the scaffold now draws the frame down and permits the leaf springs 36 to raise the clutches 29 and bind the same against the sides of the cable 12. This holds the frame from moving down about the cable 12. The hand lever 52 is now moved in toward the frame, the same swinging about the pin 63 and binding the shoe 64 against the cable 12 and the drum 42. At the same time the segment 48 is carried with the lever 52, by reason of its binding action against the drum 42, and the pawls 56 and 57 engage with the teeth of the ratchet 47 to insure the turning of the drum 42. The cable is moved over the drum 42 during its rotation to draw the cable down between the clutches 29 and feed the cable out through the lower end of the frame. By reason of the spring action of the clutches 29 the cable can be drawn down between the clutches, but cannot be moved up therebetween until the clutches are held down by hand. The operation of the lever 52 is repeated whereby the drum

is turned a fraction of a revolution at each inward movement of the lever 52.

In lowering the scaffold the clutches 29 are drawn down against the tension of the springs 30 and held away from the sides of the cable 12 while the hand lever 52 is moved out from the frame a slight distance to ease up the pressure of the brake shoe 54 against the cable and the drum. When the frame is being lowered the pawls 56 and 57 are raised out of the path of the teeth of the ratchet 47, the same being held in such position by the spring 59 engaging against the opposite flattened faces of the pawls, for the purpose of freeing the drum and allowing it to rotate backwardly beneath the web 50.

From this construction and arrangement it is seen that this scaffold adjusting device is adapted for use in connection with very high buildings wherein a large amount of cable cannot be conveniently carried, and wherein it is not necessary to knock down and reconstruct the scaffold at each elevation of the same.

Having thus described the invention, what is claimed is:

1. A scaffold including a supporting frame, a vertical cable passing through the frame, a drum rotatably disposed in the frame, said cable being wound about the drum and depending therefrom, a segment pivoted concentric to the drum upon the frame, an arm carried by the segment and being offset over the drum, a hand lever hinged upon the arm, a brake shoe pivoted upon the lower end of the hand lever and engaging against the periphery of the drum to bind the cable thereagainst, a ratchet fixed upon one end of the drum, pawls carried by the segment for engagement with the ratchet to rotate the drum, and a stop carried by the arm for limiting the movement of the lever and communicating its movement to the segment.

2. A scaffold including a frame, a cable depending through the frame, a drum mounted upon the frame and receiving the cable thereabout, and an operating lever hinged in the frame and having connection with the drum for rotating the same, said operating lever carrying braking means to regulate the passage of the cable through the frame.

3. A scaffold including a vertical cable, a frame engaging about the cable for vertical adjustment, a drum carried by the frame and receiving the cable, operating means carried by the frame for revolving the drum to raise the frame about the cable, and a braking mechanism carried by the frame and having connection to the operating mechanism for controlling the movement of the cable through the frame.

4. A scaffold including a vertical support-

ing cable, spaced bars engaging loosely against the sides of the cable, a clutch mechanism carried by the bars to engage the opposite sides of the cable to hold the frame from moving down thereabout, a feeding drum carried in the frame and engaging the cable, a segment carried by the frame concentric to the drum, a ratchet carried upon one end of the drum, pawls hinged upon the segment, a spring carried by the segment and engaging with the pawls to hold the same against the ratchet, shoulders formed upon the pawls for engagement with the spring to hold the pawls out of engagement with the ratchet, and a brake shoe carried by the segment for engagement against the cable and the drum to control the downward movement of the frame when the pawls are released from the ratchet.

5. A scaffold including a corner frame, a supporting cable for the frame, cooperating clutch members carried in the upper end of the frame for engagement with the cable, a drum mounted upon the frame to receive the cable thereover, a lever carried upon the frame and having operative connection with the drum for rotating the same to raise the frame, and a brake shoe carried upon the lever and binding against the drum to regulate the downward movement of the frame about the cable.

6. A scaffold including a corner frame, a cable passing through the corner frame, a drum journaled in the frame and receiving the cable thereover, a lever pivoted in the frame and having connection with the drum for rotating the same, a brake shoe carried by the lever for binding against the cable and the drum during rotation, and a clutch mechanism carried in the frame to hold the cable from movement therethrough when released by the lever.

7. A scaffold including a corner frame, a cable depending through the frame, an operating lever carried by the frame, locking means connected to the lever for engagement with the cable to hold the same from movement through the frame, a drum journaled in the frame and having the cable wound thereabout, and rotating means hav-

ing connection with the lever and engaging with the drum for revolving the same.

8. A scaffold including a corner frame, a vertical supporting cable passing through the corner frame, a feeding drum journaled in the frame and receiving the cable, a clutch carried in the frame for engagement with the cable to hold the frame from downward movement thereabout, an operating lever carried by the frame and having connection with the drum to rotate the same, releasing means disposed in the frame and having connection with the drum and the lever to release the drum therefrom, and a brake carried by the lever for engagement with the drum to control the downward movement of the frame when the drum is released.

9. A scaffold including a corner frame, a vertical supporting cable passing through the frame, a feeding drum journaled in the frame and receiving the cable, an operating lever carried by the frame and having connection with the drum to rotate the same, a brake carried in the frame for engagement with the drum to control the downward movement of the frame, and connecting means arranged between the brake and the operating lever adapted to apply the brake upon the release of the drum from the lever.

10. A scaffold including a vertical frame, a cable depending through the frame for supporting the same, an automatic clutch carried in the upper end of the frame and engaging with the cable to normally bind the cable in the frame, a feeding drum journaled in the frame and engaging with the cable to raise the frame thereon, operating means carried by the frame and having connection with the drum for rotating the same, and a brake shoe disposed in the frame and engaging with the drum to control the downward movement of the frame about the cable.

In testimony whereof, I affix my signature in presence of two witnesses.

EGBERT WHITNEY. [L. S.]

Witnesses:

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