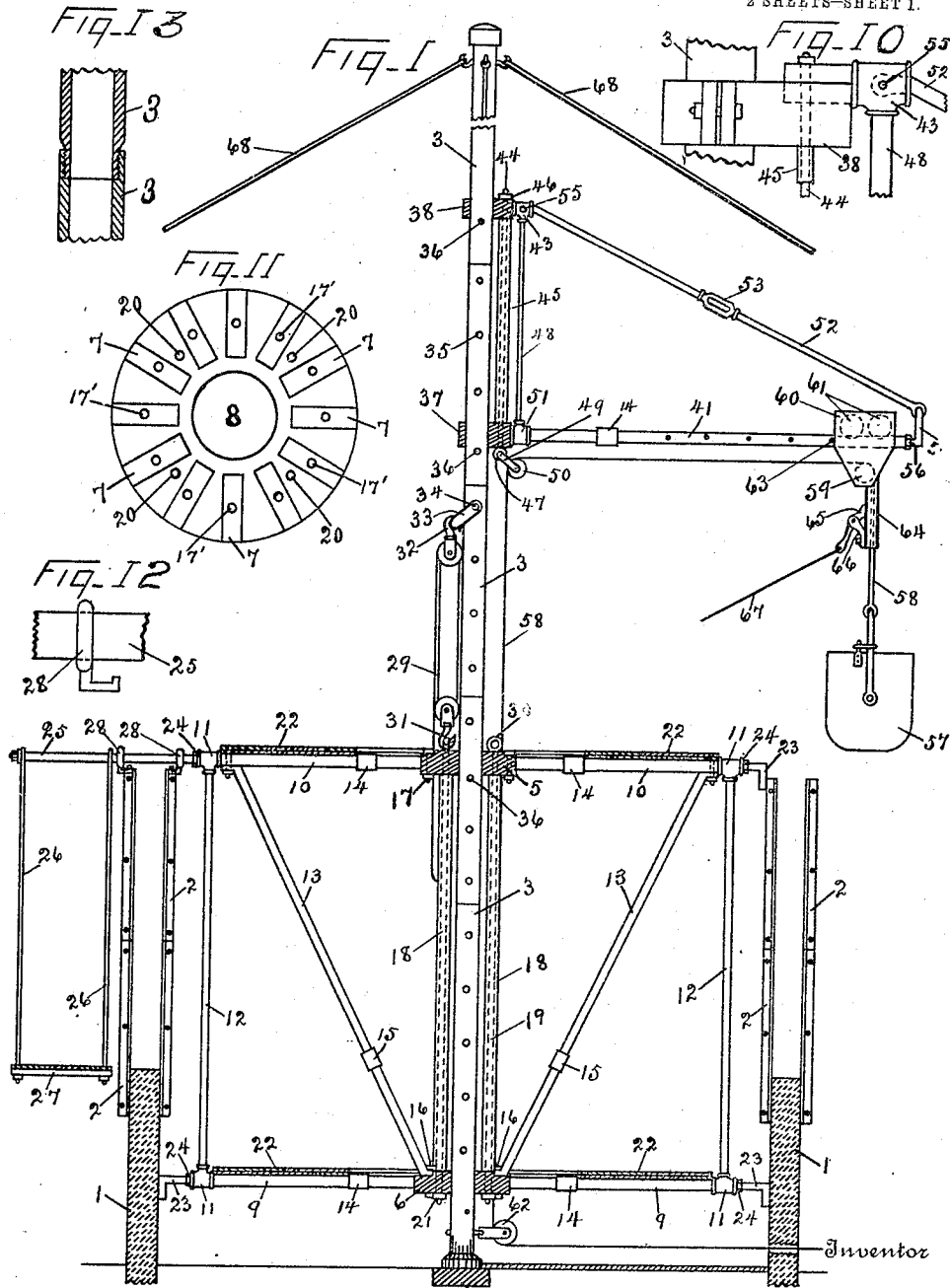


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 APPARATUS FOR BUILDING CIRCULAR WALLS AND MEANS FOR ADJUSTING THE APPARATUS.
 APPLICATION FILED APR. 25, 1914.

1,127,369.

Patented Feb. 2, 1915.

2 SHEETS-SHEET 1.



Witnesses
 H. P. Timley,
 J. W. Stettin

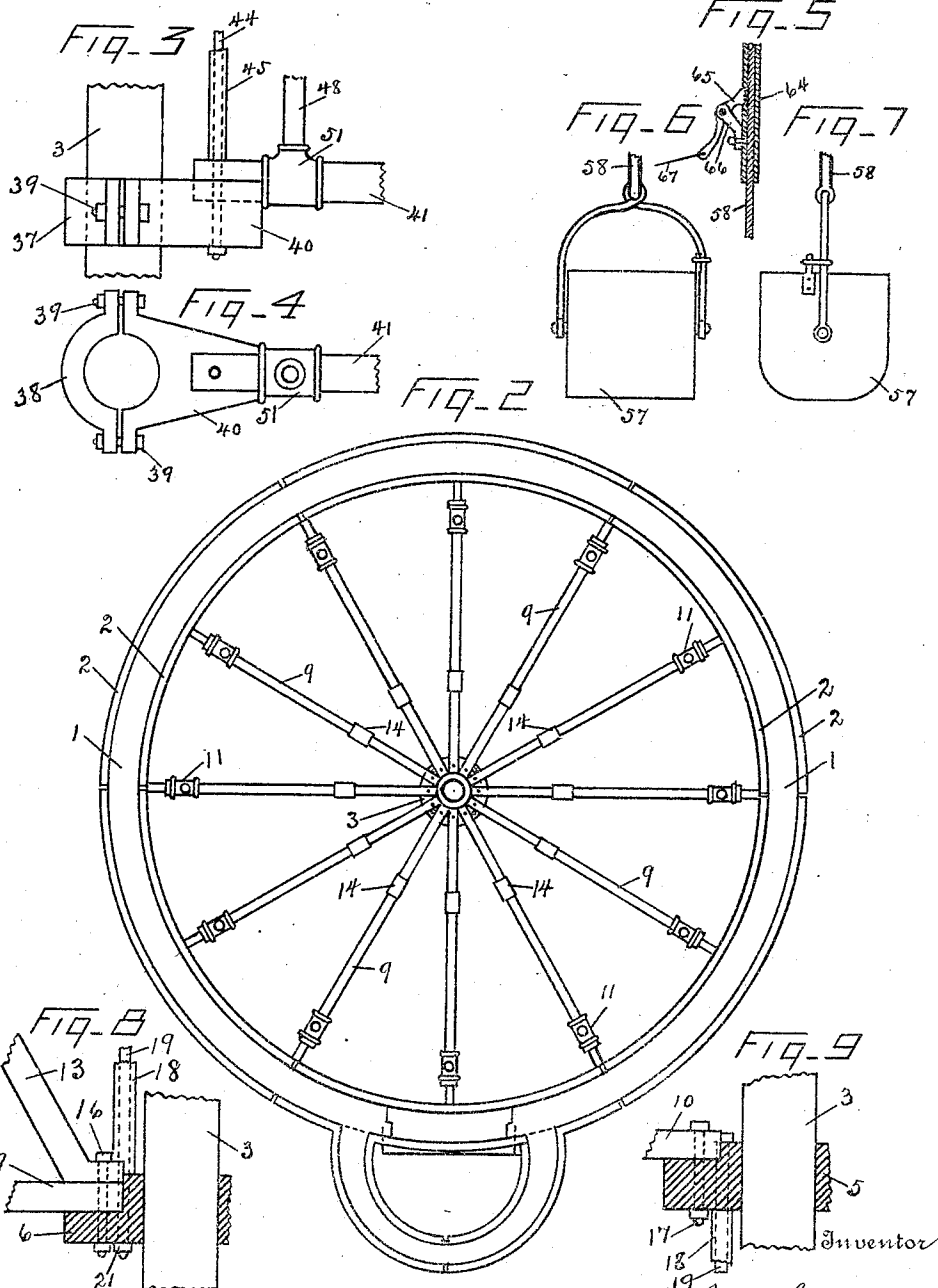
A. Q. Nash
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UNITED STATES PATENT OFFICE.

ALEXANDER Q. NASH, OF BELTON, TEXAS.

APPARATUS FOR BUILDING CIRCULAR WALLS AND MEANS FOR ADJUSTING THE APPARATUS.

1,127,369.

Specification of Letters Patent.

Patented Feb. 2, 1915.

Application filed April 25, 1914. Serial No. 834,304.

To all whom it may concern:

Be it known that I, ALEXANDER Q. NASH, a citizen of the United States, residing at Belton, in the county of Bell and State of Texas, have invented certain new and useful Improvements in Apparatus for Building Circular Walls and Means for Adjusting the Apparatus, of which the following is a specification.

My invention relates to scaffold adjusting apparatus, and particularly to means for elevating and lowering scaffolds for building circular walls for silos, circular tanks, smoke stacks, and similar circular walls, and the object is to provide means for moving easily a scaffold as a wall is built up and for holding the scaffold rigid while being moved and when located at any desirable height and for strutting the scaffold against the portion of the wall which is completed and for raising or elevating the forms used in building the walls and for truing the forms to a true or correct circle so that the wall will be perfectly cylindrical and rigid and plumb throughout its length and to make the scaffold perfectly safe and rigid so that workmen will not be disturbed by a shaking structure.

Another object is to provide a scaffold with extensible arms so that a scaffold can be suspended on the outside of the wall. One advantage is that the scaffold is adjustable or extensible so the scaffold can be rigidly braced in different sizes of structures.

Other objects and advantages will be fully explained in the following description and the invention will be more particularly pointed out in the claims.

Reference is had to the accompanying drawings which form a part of this application.

Figure 1 is an elevation of the apparatus with one half of the scaffold removed, showing the holding castings in section. Fig. 2 is a plan view of the lower part of a scaffold, showing the relative arrangement of the scaffold to the wall which is being built. Fig. 3 is a detail view of the lower connection of the derrick to the central mast. Fig. 4 is a plan view of the same. Fig. 5 is a detail view of the lock for the hoisting cable. Fig. 6 is a detail view of a hoisting and dumping bucket. Fig. 7 is another side elevation of the hoisting and dumping bucket, showing the device for locking the

bucket against tilting. Fig. 8 is a detail view of the lower connection of the scaffold with the central mast. Fig. 9 is a detail view of the upper connection of the scaffold with the central mast. Fig. 10 is a detail view of the upper connection of the derrick with the central mast. Fig. 11 is a plan view of the casting for either the upper or lower part of the scaffold. Fig. 12 is a detail view of the devices for elevating the forms. Fig. 13 is a broken vertical section of the mast.

Similar characters of reference are used to indicate the same parts throughout the several views.

The drawings show a portion of a circular wall 1 which is being built and portions 2 of the forms which are used for building the wall. A central mast 3 is set on a suitable base 4 at the center of the circle of the wall. The scaffold is built on an upper casting 5 and a lower casting 6. Each casting has a plurality of grooves 7 radially arranged and has a central opening 8 for the mast. A plurality of radial arms 9 are mounted in the grooves 7. A plurality of radial arms 10 are mounted in similar grooves in casing 5. T-pipes 11 are mounted on the outer ends of the arms 9 and 10. The arms 9 and 10 are preferably made of pipe. The outer ends of the pipes 9 and 10 are provided with vertical braces 12 which are screwed into the T-pipes 11 and the arms 9 and 10 are further braced by the diagonal braces 13, thus forming a truss of the upper and the lower arm. The braces 12 and 13 are preferably made of pipe. The object is to make the scaffold as light as possible. The arms 9 and 10 may be provided with sleeves 14 for making the arms longer or shorter. The braces 13 may be provided with sleeves 15 for adjustment of the braces. At their upper ends the braces 13 are bolted to the arms 10 near the T-pipes 11 and at their lower ends they are bolted to the inner ends of the arms 9 and the bolts 16 extend through the casting 6. The inner ends of the arms 9 are bolted to the casting 5 by bolts 17 through holes 17'. The hubs or castings 5 and 6 are spaced apart by braces, consisting of pipes 18 spacing the castings apart and rods 19 which run through the pipes 18 and through the openings 20 in the casings. The rods 19 have heads on one end and nuts 21 on the

other ends. Boards 22 may be placed on the arms 9 and 10 to form platforms. The arms 9 and 10 are adjusted to the wall 1 and to the forms 2 by adjusting struts 23 which are threaded and provided with nuts 24. To tighten the struts against the wall or forms, turn the nuts 24 which will bear against the ends of the rods 9 and 10 and push the struts out against the wall 1 and the forms 2. For forming a scaffold on the outside of the wall, the struts 23 may be replaced by rods 25 which are screwed or telescoped into the arms 10. Cables or rods 26 are connected to the rods 25 and extended down to bars 27 and connected thereto and boards 28 are placed on the bars 27. Rods 26 may be connected to as many of the rods 25 as may be desirable. The rods 25 can be placed in the ends of all the pipes 10 if necessary. The rods 25 are particularly adapted for raising the forms 2 when a section of the wall has been finished. The forms 2 are elevated to form a new section of wall. The forms 2 are connected to the rods 25 by hooks 28. See Fig. 13.

The scaffold within the wall is elevated by differential hoists 29. Eyes 30 are formed in the heads of the rods 19 and hooks 31 are caught in the eyes 30, the hooks 31 having a swivel connection with the hoists 29. The hoists are provided with hooks 32 and the connection is made with the mast 3 by means of a clevis 33 which extends on the sides of the mast and a bolt 34 runs through the mast and through the clevis. A plurality of holes 35 are made in the mast so that the bolt 34 may be set at any desirable height. The clevis 33 and bolt 34 may be fixed at any desirable height and when the forms 2 have been elevated by drawing the scaffold upwardly as far as possible by means of the differential hoist, the clevis and bolt may be set at a higher point and the operation of elevating the scaffold repeated as often as desired. The same holes 35 may be used to hold the scaffold when drawn to a desired position. A bolt 36 may be inserted in one of the holes 35 under the scaffold so that the scaffold will be supported on the bolt 36.

The same mast 3 is used to elevate the concrete or other material for building the wall. A derrick is mounted on the mast and is adjustable thereon. Collars 37 and 38 are mounted on and secured thereon by making the collars in two parts and clamping the same on the mast by bolts 39. Each collar has an extension 40, and each extension has a curved cavity therein. The lower collar supports an arm 41 of the derrick. The arm 41 rests in the cavity in the extension 40. A rod 42 rests in the upper extension 40 and is screwed into a T-pipe 43. The rod 42 and the arm 41 are held in the supporting extensions 40 by a rod 44 and the

collars 37 and 38 are spaced apart by a sleeve 45. The rod 44 runs through the sleeve 45 and the upper end is threaded and held in place by a nut 46. The lower end of the rod 44 has an eye 47 formed in the lower end. A pulley hanger 49 for a pulley 50 is supported in the eye 47. The derrick is further braced by a rod 48 which is screwed into the T-pipe 43 and into a T-pipe 51. The outer end of the derrick arm 41 is supported by a rod 52 which is provided with a turn-buckle 53 and the upper end of the rod 52 is secured in the T-pipe 43 by a bolt 55. The lower end of the rod 52 is connected to the arm 41 by a bent rod 54. The arm 41 is preferably made of pipe and the end of the rod 54 is threaded and a nut 56 is screwed on the rod 54 and bears against the end of the pipe arm 41. The nut 56 can be used for adjusting the rod 52. The material is delivered by a dumping bucket 57 and a cable 58 attached thereto. The cable 58 runs over a pulley 59 which is journaled in a carriage 60. The carriage 60 runs on the arm 41 by means of two antifriction pulleys 61 which are journaled in the carriage 60. The cable 58 runs over the pulley 50 and down by the mast 3 and over a pulley 62 which is secured to the mast 3 at the bottom thereof and then out of the wall to some power for operating the cable. The carriage 60 is held stationary by a pin 63 which is inserted through the arm 41 while the bucket 57 is being elevated. When the bucket reaches the desired height, the pin 63 may be removed and so that the carriage 60 may be brought to a position over the forms for dumping the contents of the bucket in the forms 2. The bucket 57 may be locked stationary at any height desired. A pipe 64 is made rigid with the carriage 60 and a dog 65 is pivotally connected with a bracket 66 which is attached to the pipe 64. A slot is cut in the pipe 64 and as the cable 58 moves through the pipe 64 the dog 65 may be made to engage the cable and bind the same in the pipe 64. A suitable cord 67 may be connected to the handle of the dog 65 and extended to a suitable position for operating the dog. The mast 3 may be braced by suitable guy rods 68.

It will be noticed that the forms 2 are in sections divided both horizontally and vertically. These sections are from two and a half to three feet deep. Several sections may be used in a day as they are simply placed one above the other and secured by suitable bolts. As soon as the wall adjacent to the lowest section is cured or dried the lowest section is removed and placed on top of the upper form, and this can be done without interfering with the building of the wall. The truing of the forms is accomplished by strutting the scaffold to a fixed position. The struts 23 of the lower mem-

ber or platform are first strutted against the finished wall 1. This will retain the scaffold as a whole rigidly in a fixed position regardless of the mast because each pair of arms, the one above and the one below, is formed into a truss which is rigid. This having been done, the forms 2 are then adjusted to true or plumb position relative to the lower member of the scaffold which have already been adjusted to the completed wall. The upper struts 23 are used to adjust the forms 2 without relation to the mast 3 which is used merely to support the scaffold and as an anchor for hoisting the building material. On account of the height of the mast 3, it cannot be used as a true guide for plumbing purposes.

What I claim, is,—

1. A circular wall building apparatus comprising a central mast, a scaffold movable vertically on said mast, means for moving the scaffold vertically on said mast, means for strutting said scaffold against a circular wall, and means for adjustably strutting the wall-making forms from said scaffold.

2. A circular wall building apparatus comprising a central mast, a scaffold movable vertically on said mast and provided with radial arms, means for moving said scaffold vertically, means for forming a vertical truss of each arm, means for strutting said arms against the circular wall and means for adjusting the forms relative to said trusses for making the wall.

3. A circular wall construction apparatus comprising a central mast, a scaffold movable vertically on said mast and consisting of upper and lower members engaging said mast and radial arms secured to said members, means for moving said scaffold vertically on said mast, means for strutting the lower member of said scaffold against the wall, and means for adjusting the forms to the upper member of the scaffold for holding and truing the forms.

4. A circular wall construction apparatus comprising a central mast, a scaffold movable vertically on said mast and consisting of upper and lower circular members, means for spacing said members apart and means for holding said members at a fixed rela-

tion to each other, radial arms in pairs secured to said members, means for forming a truss of an upper and a lower arm, means for strutting said arms against the circular wall and means for adjusting the forms to be supported against the upper arm for making the wall, and means for moving said scaffold vertically on said mast.

5. A wall construction apparatus comprising a central mast, a scaffold movable vertically on said mast and consisting of upper and lower members, a casting for each member having a central opening for said mast, and having radial slots therein, means for spacing said castings fixedly apart, radial arms secured to said casting in said slots, mean forming a vertical truss of an upper and a lower arm, and adjustable means carried by said arms for strutting the lower member of the scaffold to the wall and for adjusting molding forms to the upper member of said scaffold and plumbing said forms relatively to the completed portion of the wall.

6. A wall construction apparatus comprising a central mast, a scaffold movable vertically on said mast and provided with upper and lower radial arms, means for moving said scaffold vertically on said mast, means adapted to strut said lower arms against the wall, and means for adjusting the forms for making the wall to said upper arms for holding said forms plumb relative to said wall.

7. A circular wall construction apparatus comprising a central mast, a scaffold movable vertically on said mast, means for adjusting said scaffold against the circular wall for bracing and truing purposes, means for adjusting the forms for making the wall to said scaffold for bracing the form against the scaffold and plumbing the form relative to said wall, a derrick carried by said mast, and means carried by said derrick for delivering material into said forms.

In testimony whereof, I set my hand in the presence of two witnesses, this 21st day of April, 1914.

ALEXANDER Q. NASH.

Witnesses:

A. L. JACKSON,
W. P. TINSLEY.