

H. R. FOOTE.

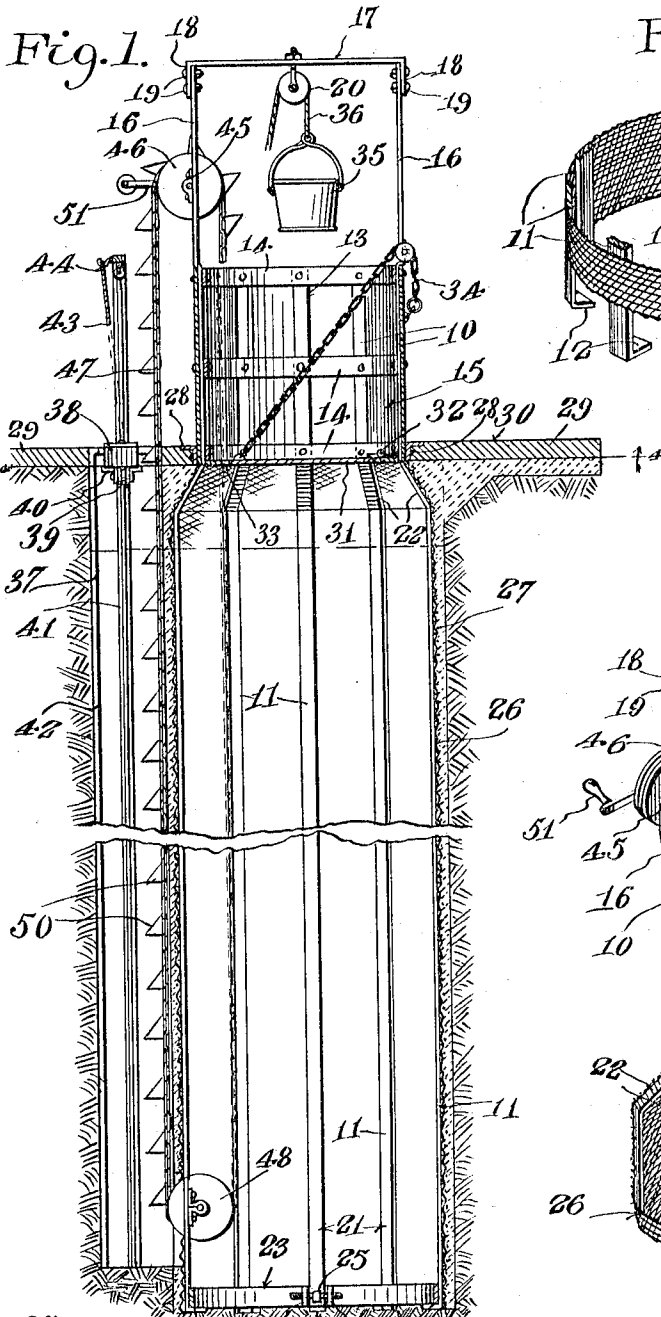
WELL LINING.

APPLICATION FILED MAY 17, 1912.

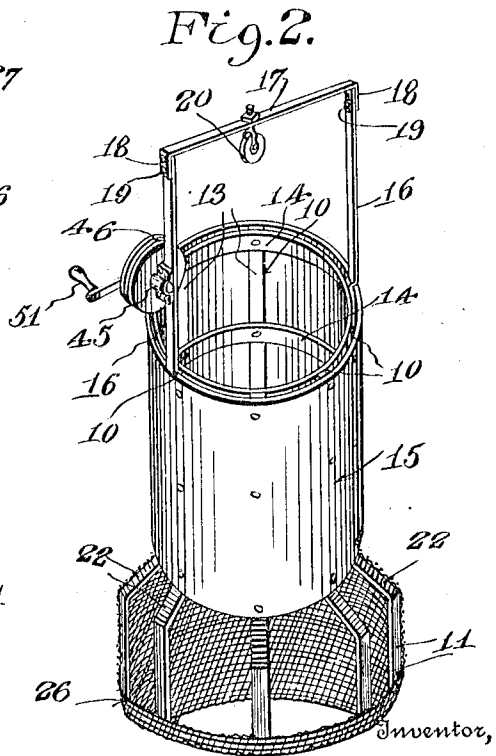
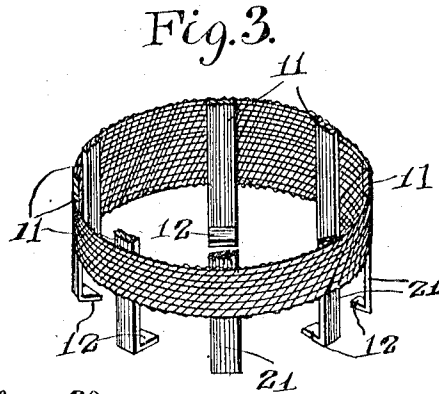
Patented Mar. 4, 1913.

2 SHEETS-SHEET 1.

1,055,264.



Witnesses:
J. P. Miller, 18 24 12 24 12
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2 SHEETS—SHEET 2.

Fig. 4

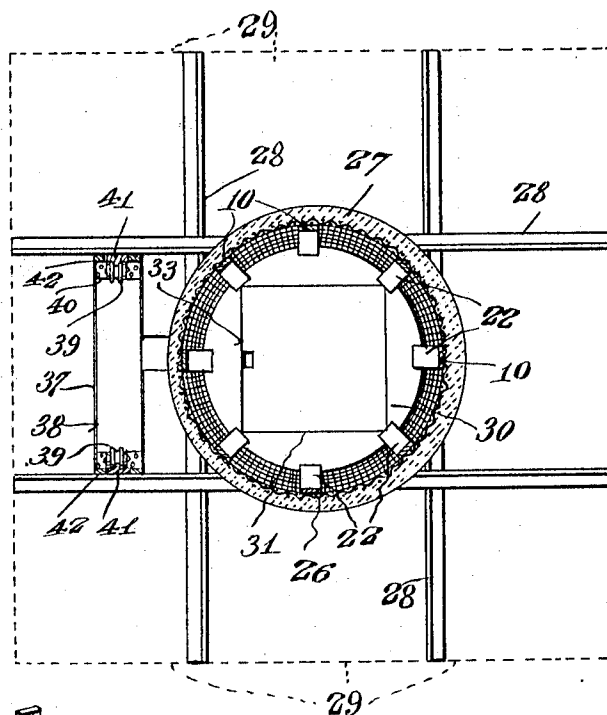


Fig. 5

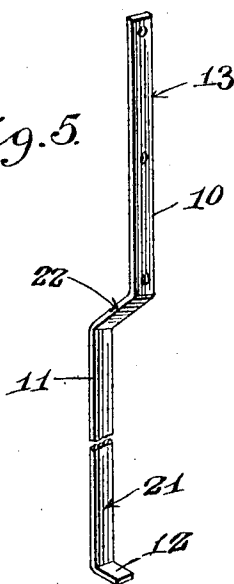
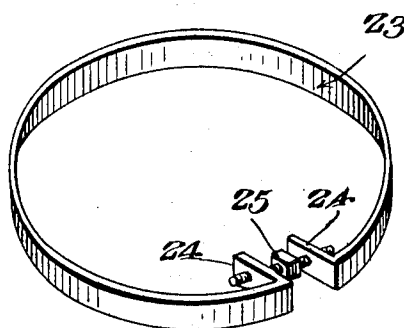


Fig. 6



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WELL-LINING.

1,055,264.

Specification of Letters Patent.

Patented Mar. 4, 1913.

Application filed May 17, 1912. Serial No. 697,939.

To all whom it may concern:

Be it known that I, HARVEY R. FOOTE, a citizen of the United States, residing at Dublin, in the county of Dublin, Ireland, have invented certain new and useful Improvements in Well-Linings; and I do 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 appertains to make and use the same.

This invention relates to wells and more particularly to linings therefor.

An object of the invention is to provide a well lining and cylinder above the surface of the ground, with a platform and hinged door in the center of the platform, which may be employed in a well having a pump positioned therein or buckets.

Another object is to provide a well lining of this character including spaced staves and means at the lower end of the staves for forcing the same tightly against the wall of the well.

With the above objects in view the invention consists of certain novel details of construction and combination of parts herein-after fully described and claimed, it being understood that various modifications may be made in the minor details of construction within the scope of the appended claims.

In the accompanying drawings forming part of this specification:—Figure 1 is a vertical section of a conventional form of well showing my invention positioned therein. Fig. 2 is a fragmentary perspective view of the upper portion of the device. Fig. 3 is a similar view of the lower portion of the device. Fig. 4 is a cross sectional view on the line 4—4 Fig. 1. Fig. 5 is a detail perspective view of one of the staves. Fig. 6 is a detail perspective view of the expanding ring employed at the lower ends of the staves for forcing the same against the wall of the well.

Referring now to the drawings in which like characters of reference designate similar parts, 10 indicates the staves which are arranged in a circle and have their lower portions offset from their upper portions, as shown at 11 and have their lower ends bent inwardly at right angles as shown at 12.

To the upper portions 13 of the staves 10 are secured the rings 14 which are spaced from one another and positioned inwardly

of the staves, while the cylinder 15 is positioned around the upper portions 13 of the staves 10. Projecting upwardly from between the cylinder 15 and the upper ring 14, are the opposite standards 16 which may be formed by continuing two of the staves 10 upwardly above the cylinder 15, if desired, or may be formed in separate pieces and secured to the upper portions 13 of opposite staves in any suitable and well known manner. The upper ends of the standards 16 are connected by the cross bar 17 having its opposite ends 18 bent downwardly and secured to the standards 16 by means of bolts 19 or other securing means. The standard 17 carries the pulley 20 suspended therefrom, the purpose of which will presently appear.

The upper portions 13 of the staves 10 and the lower portions 21 thereof are connected by means of the outwardly and downwardly slanting portions 22 at the lower edge of the cylinder 15, it being understood that each stave 10 is preferably formed in one piece. An expanding ring 23 is placed inwardly of the lower portions 21 of the staves 10 and upon the inwardly directed portions 12 for expanding the lower portions of the staves and forcing the same against the wall of the well. The ring 23 is split and is formed of resilient material, the ends of the ring being bent inwardly, as shown at 24 and parallel to one another and provided with threaded openings through which the oppositely threaded ends of the ring expanding screw 25 are engaged. It will be understood that the screw 25 has a squared central portion to receive a wrench or other suitable tool for rotating said screw to expand or contract the opposite ends 24 of the ring 23 and thus increase or decrease the diameter of said ring, as desired.

I have shown a wire screen engaged around the lower portions 21 of the staves 10 which screen is designated by the numeral 26 and outwardly of the screen 26 the concrete wall 27 is formed, said screen 26 serving to retain the concrete in proper position while hardening. The lower portions 21 of the staves 10 retain the screen 26 positioned therearound, and the concrete wall 27 around the screen 26 in proper position and brace the same, the lower portions 21 being tightly pressed against the screen 26, by means of the expanding ring 23 engaged

against the lower extremities of said lower portions.

Secured upon the slanting portions 22 of the staves 10 and upon opposite sides of the cylinder 15 are the angleiron cross pieces 28 which are arranged in pairs, each pair comprising two parallel cross pieces arranged one upon either side of the cylinder 15 and the pairs crossing each other.

Secured upon the angleiron cross pieces 28 are the sections 29 of the platform which is designated as a whole by the numeral 30 and rests upon the ground surface, around and over the upper end of the well. The platform 30 also rests upon the concrete wall 27, a portion of which preferably projects over and rests upon the slanting portions of the staves 10, directly beneath the platform.

I have shown the sections 29 of the platform 30 as being composed of properly shaped blocks of wood positioned upon angleiron cross pieces 28 to form a circular platform. The sections 29, however, may be of proper form to produce a square platform and may be formed of concrete or any other suitable material, as desired.

Secured to the central section 29 of the platform 30 is a trap door 31 which is secured to the section 29 by means of the hinges 32 along one edge of said door and along one edge of a central opening 33 in said central section 29. To the opposite edge of the trap door 31 is secured one end of a rope 34, the opposite ends of which are positioned above and outwardly of the cylinder 15, where it may be readily grasped for opening the door 31 by swinging the same upwardly upon its hinges 32. When the door 31 is in its open position, a pail 35 may be let down upon the rope 36 passed through the ring 20 for obtaining water from the bottom of the well. When the door 31 is closed, however, dirt, etc., is prevented from finding its way into the well and the bucket 35 may be allowed to rest upon the door 31. To one side of the well is provided a suitable opening 37 extending downwardly to the side of the well to receive a dumb waiter 38 having rollers 39 which are positioned between the bracket arms 40 projecting from the sides of the dumb waiter, said rollers being engaged with the track rails 41 at either end of the dumb waiter opening 37, said rails extending vertically and being secured to the end boards 42 at the opposite ends of the opening 37. The end boards 42 are securely driven into the ground, with their lower ends below the bottom of the opening 37 and their upper ends secured to the parallel ends of one set of angleiron cross pieces 28. The upper ends of the rails 41 preferably project through the platform 30 and above the same to permit of raising the dumb

waiter 38 above said platform. Any suitable means may be provided for raising and lowering the dumb waiter 38, therefore, I have simply shown a rope 43 which may have its upper end temporarily secured over the hook 44 secured to the upper end of one of the rails 41.

Secured to one of the standards 16 is a bracket 45 carrying a pulley 46 around which passes the bucket chain 47 passing over a similar pulley 48 carried in the bracket 49 secured upon one of the staves 10, near the lower extremity thereof. The chain buckets 50 upon the chain 47 are adapted to be moved around the pulleys 46 and 48 to elevate the water from the bottom of the well, by operating the handle 51 rigid with the upper pulley 46, as will be clearly understood. When the pulleys 46 and 48 are in the positions shown upon the drawings, the chain 47 with the buckets 50 pass through the dumb waiter opening during their downward movement and through the well opening, inwardly of the staves 10 and the cylinder 15 during their upward movement, the buckets moving through the door opening in the platform 30 during said upward movement.

It will be understood that it is not necessary to employ both the chain 47 with the buckets 50 and the means for supporting and operating the same when the pail 35 and rope 36 are used. If desired, the chain 47 with the buckets 50 may be dispensed with and a chain having a suitable hook for engagement with the dumb waiter 38 substituted therefor and the chain and its operating means employed for raising and lowering the dumb waiter. When the bucket chain 47 and buckets 50 are employed for raising the water from the well, the dumb waiter may be positioned at the opposite side of said well or at any point desired. It will further be understood that this arrangement may be desired when the pail 35 and rope 36 are dispensed with.

It will thus be seen that I have provided a well lining and cylinder with supporting means therefor in combination with a dumb waiter and hoisting means and means for guiding the dumb waiter in its upward and downward movements which will be of comparatively simple construction and which will be highly efficient and durable in use. It will further be apparent that the staves 10 and other parts may be varied in length, etc., according to the size and depth of the well.

It will of course be understood that minor changes in the details of construction may be made if desired without in the slightest degree departing from the spirit of my invention.

What is claimed, is:—

1. A device of the class described com- 130

prising staves having upper and lower portions, means for connecting the upper portions of the staves, a cylinder around the connected upper portions of the staves, a platform extending outwardly from the lower edge of the cylinder, and means for expanding the lower ends of the staves.

2. A device of the class described comprising staves having upper and lower portions connected by slanting portions, a cylinder around the upper portions of the staves, a platform secured to the slanting portions of the staves and extending outwardly from around the lower edge of the cylinder, a platform section within the lower end of the cylinder and having a central opening, a door for normally closing said opening, the lower portions of the staves being adapted for engagement with the wall of a well, and means for resiliently retaining said lower portions of the staves in engagement with the wall.

3. A device of the class described comprising a plurality of staves having their upper portions connected, a cylinder connected around the upper portions of said staves, the lower portions of the staves being offset from the upper portions, a screen engaged around the lower portions of the staves for supporting a plastic wall, and an expanding ring engaged against the inner faces of the lower portions of said staves for resiliently retaining the screen against the plastic wall.

4. A device of the class described comprising a plurality of staves, means for connecting the staves at their upper portions and inclosing the same, a platform secured to the staves and extending outwardly there-

from, the lower ends of the staves being bent inwardly to support an expanding hook, a screen positioned around the lower portions of the staves, the lower portions of the staves and the screen being adapted to be positioned in a well and against the side thereof, and means for expanding the ring to force the lower ends of the staves against the screen.

5. A device of the class described comprising a plurality of staves, means for connecting the staves, means for inclosing the upper ends of the staves, means for expanding the lower ends of the staves, and a platform carried by the staves at the lower edge of the inclosing means.

6. A device of the class described comprising a plurality of staves having their lower portions offset from their upper portions, said lower portions being connected with the upper portions by downwardly slanting connecting portions, means for expanding the lower portions of the staves, means for connecting and inclosing the upper portions of the staves, parallel crossed angleirons secured to the connecting portions of the staves and extending at right-angles to said staves to which they are secured, and a platform secured upon the crossed angleirons with a central opening and door inwardly of the stave inclosing and connecting means.

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

H. R. FOOTE.

Witnesses:

JOSEPH H. METCALF,
D. B. ROBINSON.