

(No Model.)

W. WILSON.
Apparatus for Lining Wells.

No. 233,826.

Patented Oct. 26, 1880.

Fig. 1.

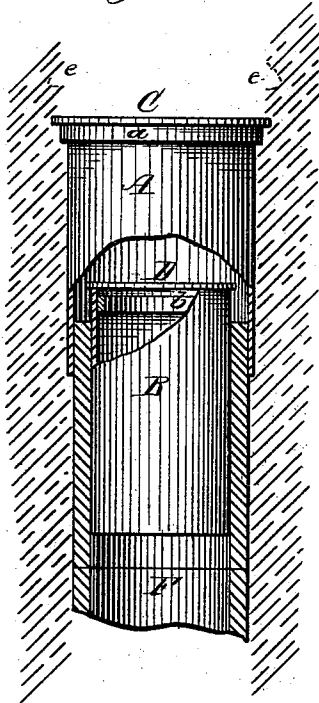
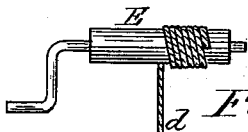


Fig. 2.

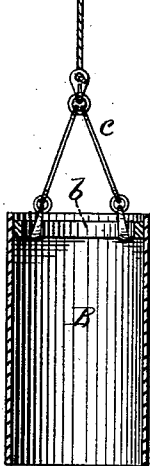
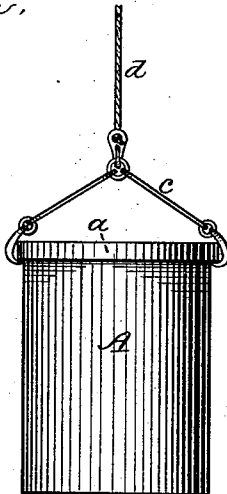
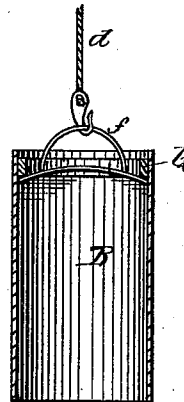


Fig. 3.



WITNESSES:

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APPARATUS FOR LINING WELLS.

SPECIFICATION forming part of Letters Patent No. 233,826, dated October 26, 1880.

Application filed September 18, 1880. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WILSON, a citizen of the United States, residing at Otsego, in the county of Allegan and State of Michigan, have invented certain new and useful Improvements in Apparatus for Lining Wells; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in apparatus designed to facilitate the construction of the cement lining of wells; and it consists in the construction and arrangement of certain forming-cylinders and the devices for operating them, as will be hereinafter fully described, and then specifically pointed out in the claims.

In the drawings, Figure 1 shows a vertical section of a well with the apparatus in position for operating therein. Fig. 2 is a representation of the cylinders, showing the means by which they are raised or lowered in the well. Fig. 3 shows a modification of the device for use with the core-cylinder.

A represents a hollow cylinder, preferably formed of sheet metal, and of equal internal diameter from end to end, said diameter being equal to the external diameter of the proposed well-lining. Around the outside of the upper end of this cylinder is a stiffening-band, *a*, firmly secured by rivets or other suitable means, and serving to strengthen the cylinder, as well as form the point of attachment for the elevating and lowering devices when it is desired to raise or lower the cylinder in the well, as will be hereinafter more fully described.

B is the inner or core cylinder, also formed of sheet metal, and of an external diameter equal to that of the internal diameter of the proposed cement lining. This core-cylinder is provided at or near its upper end with an internal stiffening-ring, *b*, riveted or otherwise securely fastened to the metal of the cylinder, and serving, like the band *a*, to stiffen the cylinder, as well as form a means of attaching the elevating and lowering devices.

Covers C and D are provided for covering the cylinder, when desired, to prevent the fall of material into the well, and may also form a scaffold for the workman, and to place a part of his material or tools upon while at work.

The apparatus I prefer to employ in raising and lowering the cylinders consists of a windlass, E, placed over the well and provided with a rope, *d*, having at its lower end a hook, to which may be attached the slings *c*, the hooks of which will take hold of the bands *a* or *b* upon the cylinders, as shown in Fig. 2 of the drawings, and thus furnish a ready means of raising or lowering them when desired.

In some cases the device shown in Fig. 3 may be used with good effect in handling the core-cylinder. This device consists simply of a cross-stick, which may be slightly curved, and having a length equal to the internal diameter of the cylinder, the ends of the stick catching under the band *b* and the hook upon the end of the rope taking hold of it near the middle of its length, or of a bail, *f*, attached thereto.

The method of operating this apparatus is as follows: After the well has been sunk to the required depth a section of cement or other tube, F, having the same internal and external diameter as the proposed lining, is placed upon the bottom. The core-cylinder is then lowered into the tube, but allowed to project some distance above it. The outer cylinder is then put in place, its lower end surrounding the tube F, which thus forms a bottom to the space between the cylinders, and also acts as a guide to preserve the proper relative distance between them and retain them steadily in place. The cover D is then placed upon the inner cylinder to prevent the falling of refuse into the well. The operator now fills the space between the cylinders with cement or concrete, which sets or hardens sufficiently in a short time to allow the cylinders to be raised about one-half their length, the section of lining just formed acting as a guide to the cylinders during the movement. The operation of filling with cement is then repeated, as well as that of drawing forward the cylinders until the lining reaches the desired height in the well. While this process of forming the lining is going on care is taken to fill the space between the sides

of the well and the lining with earth or gravel well tamped down, so as to leave no openings into which the earth might fall and crush in a side of the lining before it had become perfectly solidified.

5 In order to give a standing-place for the operator during the process of constructing the lining and filling the space between it and the sides of the well, steps *e e* may be excavated
10 in the sides; or, if its diameter be too great to allow of this method of operation, the core-cylinder may be held in place by the rope and windlass and its cover used as a standing-
15 place by the operator while at work.

The cover C of the outer cylinder need only
be used when the work is to be left standing
for some time, or during the filling and tamping process, to prevent earth from getting into
the space between the cylinders and mixing
20 with the cement before it hardens, thus deteriorating its quality.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent, the following:

25 1. In an apparatus for lining wells, the outer

cylinder provided with the external band at its top, in combination with a core-cylinder having an internal band at or near its top, and means, substantially as shown and described, for raising and lowering the cylinders, for the
30 purpose specified.

2. In an apparatus for lining wells, the combination of the outer cylinder, the inner or core cylinder, and guide-tube F, placed in the bottom of the well, in the manner and for the
35 purpose stated.

3. In an apparatus for lining wells, the forming-cylinder and core-cylinder, constructed as shown and described, in combination with the covers C D, constructed and arranged as described, for the purpose of preventing the fall
40 of refuse into the well and forming a standing-place for the workman, as set forth.

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

WILLIAM WILSON.

Witnesses:

N. W. MILLS,

WM. E. CARMICHAEL.