No. 716,446. Patented Dec. 23, 1902.

J. F. LYMAN.

CONSTRUCTION OF CHIMNEYS, WALLS, &c.

(Application filed May 13, 1901. Renewed Oct. 6, 1902.)

(No Model.)

Fig. 1.

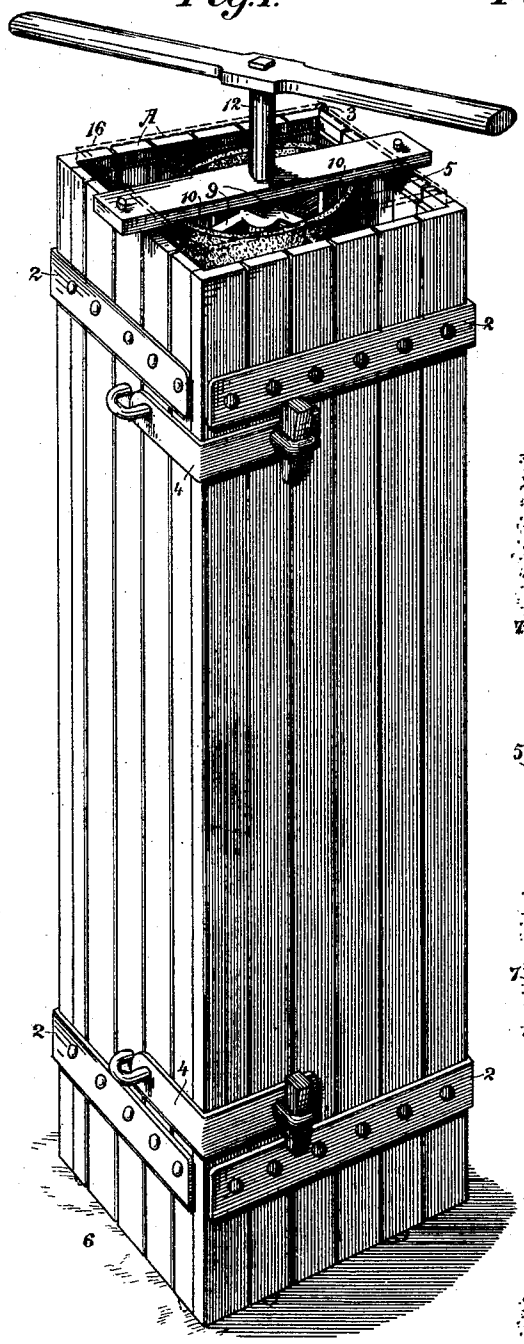


Fig. 2.

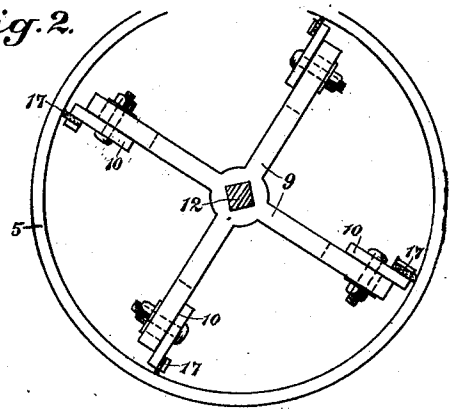
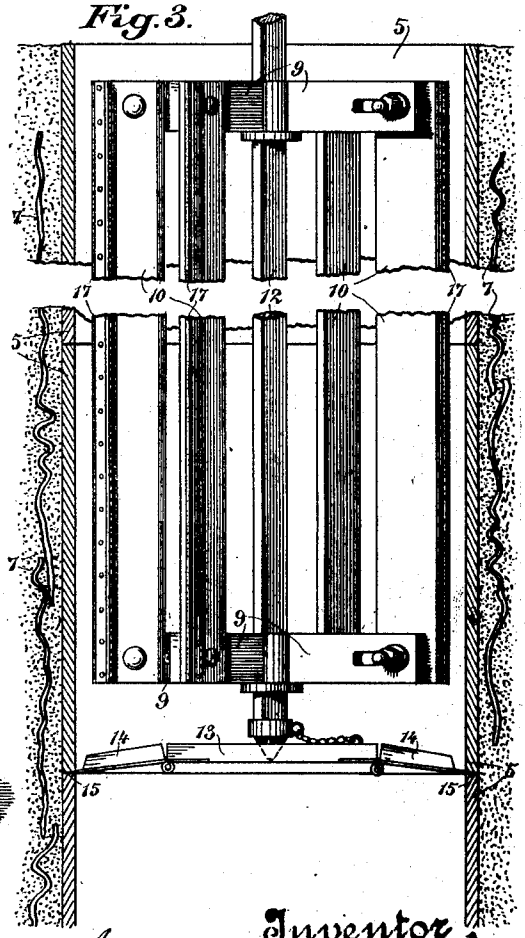


Fig. 3.



Witnesses,
C. A. Snow
W. F. Ascheck

Inventor:
Jonathan F. Lyman
By Dewey Strong & Co.
Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JONATHAN F. LYMAN, OF SOUTH SAN FRANCISCO, CALIFORNIA.

CONSTRUCTION OF CHIMNEYS, WALLS, &c.

SPECIFICATION forming part of Letters Patent No. 716,446, dated December 23, 1902.

Application filed May 13, 1901. Renewed October 6, 1902. Serial No. 126,133. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN F. LYMAN, a citizen of the United States, residing at South San Francisco, county of San Mateo, State of California, have invented an Improvement in Construction of Chimneys, Walls, and Like Structures; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an apparatus for the construction of chimneys, walls, and like structures with interior continuous tubes to form flues or other conduits or passages.

It consists of strips or plates hinged together and closable to make an exterior form, means for rigidly locking them in their closed position, centrally-located terra-cotta or earthenware tubes, and means for maintaining said tubes in alinement with a smooth interior surface while concrete is tamped about them and within the exterior casing to form the structure.

My invention also comprises details of construction, to be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a view of a mold with tubular section in place and connections. Fig. 2 is a top view of a tubular section, showing scrapers in place. Fig. 3 is a vertical section through pipe-sections and surrounding concrete, showing interior mechanism.

The exterior form or mold consists of plates or strips, as A, which may be either made singly or in sections, and these sections are connected together, so as to form a surrounding mold, within which the concrete is to be tamped.

I have here illustrated the device as applied to the building of chimneys having single flues; but it will be manifest that several flues or a wall with continuous passages or flues could be made in a similar manner.

As herein shown, the four sides of the mold are made of strips secured together by iron or other plates, as at 2, which are riveted or bolted across the top and bottom of each side section. These sections may be five feet, more or less, in length, and two of them are made rigid by bending the plates 2 around the meeting angles, so as to extend upon each side of the angle, and as these plates are made of iron and of sufficient stiffness when they have been riveted or fastened to the sides these two will stand at right angles with each other and be essentially immovable. Two of these two-part structures are then united by hinges, as shown at 3, so that they may be opened outwardly when they are to be removed and are closed together when in use. When thus closed together, they are held in place by means of clamps or hasps, as 4. These clamps are bent at right angles, having one end secured or hinged to one of the sides A and the other adapted to extend along the exterior plane of the adjacent meeting side. This end of the clamp may be secured by a staple or other lock, and the sides will thus be connected to form a rigid rectangular structure. Within the structure the terra-cotta or other earthenware tubular sections 5 are set up centrally and successively one on top of the other, and by a device to be hereinafter described they are maintained in line, so as to form a smooth interior surface while concrete is being tamped about them. The first earthenware section 5 is set in a base, as at 6, this base having a suitably-centered device for holding the lower end of the tube with relation to the outer jacket or casing A. Concrete may be tamped in about the tube until the space around it is filled nearly to the top, when another tube is set upon the first one and the tamping of the concrete continued.

I prefer to secure the whole concrete structure together by means of irregularly-bent strips of iron, as at 7, which are placed in the body of concrete between the outer jacket and the central flue and at as many points surrounding the latter as may be desired, and when the concrete has been tamped about these strips they are firmly locked in place and serve to increase the strength and rigidity of the structure. As the work proceeds it is necessary to maintain the tubes 5 in proper alinement to prevent their being forced to one side or the other while the tamping of the concrete upon the outside proceeds. In order to effect this, I have shown a framework consisting of crossed arms 9, centrally united and having upon the ends the vertical strips 10, which extend from the upper to the lower arm on each side. These strips 10 may have rubber or other soft material, as 11, pro-

jecting from the edges, so that these soft edges contact with the interior of the tube. The vertical bars 10 are adjustable out or in by making radial slots in the cross-bars 9, and by means of bolts and locking-nuts to unite the vertical bars 10 with the cross-bars 9 the bars 10 may be moved out or in sufficiently to fit them to different sizes of the tube 5. Through the central hubs of the cross-bars 9 extends a shaft 12, and the lower end of this shaft is stepped in or attached to a bar 13 of a length less than the interior of the tube. To the ends of this bar are hinged the short sections 14, and these may have projecting points, as 15, which will adapt them to enter the soft interior walls of concrete. When the first section of concrete has been tamped in about the tubes and while it is being done, the shaft with the cross and vertical arms 9 and 10 may be turned continually by means of a suitable yoke or handle fitted to its upper end, and the flexible yielding edges 17 of the bars 10 rubbing around the inside of the tubes and overlapping the joints will tend to keep the tubes in line, as well as to wipe off any soft material which may be forced in through the joints, thus maintaining a smooth interior to the tubes. As soon as the structure has been built up to about the upper end of this smoothing device it is raised, and the movement of raising it causes the hinged sections 14 to turn about their hinges sufficiently to withdraw the points 15 and allow the device to be raised until the lower end is at the top of the uppermost of the tubes. By then pushing it down and straightening out the jointed sections 14 the points will again engage with the interior of the tube or through the joints with the exterior concrete, and will thus hold the device in alinement while the next section of concrete is being filled in. In this manner the tubular portion is extended upwardly as fast as the concrete is filled in the exterior jacket, and when completed a continuous unbroken chimney or structure will be the result, with no chance for leakage through any joints which might otherwise appear.

The exterior jacket or box sections A may be extended upwardly by additional sections, which are fitted upon the upper end of the next below. These sections are preferably rabbeted on the inside of the ends, so as to receive horizontal strips 16, which overlap above and below the joints between the two sections A, and the inner faces of these strips are flush with the interior faces of the sections A, so as to present no obstruction.

After the two sections have been completed the lowermost box or jacket can be removed by disengaging the locking-clamps 4 and opening the sections about their hinges 3, when the device can be shifted and connected with the upper end of the section remaining. The work can thus be continued indefinitely.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A device substantially of the character described and including a box or jacket formed of parts hinged together at their meeting edges said parts capable of being opened or closed about said hinges, interior tubes and means for maintaining them in alinement and means for locking the parts of the box or jacket for forming a rigid structure thereof.

2. A device for the construction of chimneys and like structures from plastic material which hardens by exposure consisting of an exterior box or jacket formed of two semi-rectangular sections hinged together at one meeting edge, locking-clamps by which the other meeting edges are secured when closed to form a rigid jacket, interior centrally-disposed tubes about which a concrete filling is tamped and means for maintaining the tubes in their central position, and with smooth interior surfaces.

3. A device for construction of chimneys and like structures from plastic material which hardens by exposure consisting of a jacket or mold formed of hinged separable and removable sections, means for connecting two of said sections in line, consisting of rabbets formed upon the meeting ends, and strips fitting said rabbets extending above and below the joint, interior centrally-disposed tubes formed in successive lengths around which the plastic material is tamped within the exterior casing to form a continuous unbroken structure.

4. A device for construction of chimneys and like structures from plastic material which hardens by exposure consisting of a jacket or mold formed of hinged separable and removable sections, means for connecting two of said sections in line, consisting of rabbets formed upon the meeting ends, strips fitting said rabbets extending above and below the joint, interior centrally-disposed tubes formed in successive lengths around which the plastic material is tamped within the exterior casing to form a continuous unbroken structure, and irregular metallic strips embedded in the concrete.

5. A device for the formation of chimneys and like structures, consisting of an exterior removable casing, interior tubes formed in successive sections, means for maintaining said tubes in line while the plastic material is tamped about them within the casing, consisting of crossed arms fitting upon a central shaft, vertical bars extending between each pair of said arms having outer edges adapted to move over and smooth and aline the tubes, a step for supporting and centering the lower end of the shaft, and means whereby it may be turned within the tubes.

6. A device for forming chimneys and like structures consisting of an exterior form or casing for the reception of plastic material which hardens by exposure, tubular sections

centrally located between the exterior walls, a shaft having radially-slotted cross-arms fixed thereto, vertical bars having flexible or elastic rubbing edges and adjustable radially upon the arms, and means by which said bars are secured through the slots of the arms.

7. A device for the formation of chimneys or like structures from plastic material which hardens by exposure consisting of an exterior form or casing within which the plastic material is tamped, tubular sections centrally disposed between the walls, means for alining and smoothing said sections, consisting of a central shaft with horizontally-slotted radially-disposed arms, and vertical bars adjustably secured thereto, with means for rotating the shaft and arms within the tubes, a step whereby the lower end of the shaft is maintained centrally, said step consisting of a central portion, end portions hinged thereto having projecting points which are forced into the sides of the tube when the parts are straightened into line with each other.

In witness whereof I have hereunto set my hand.

JONATHAN F. LYMAN.

Witnesses:
S. H. NOURSE,
JESSIE C. BRODIE.