(No Model.) 2 Sheets—Sheet 1

L. G. HAASE.

CEMENT PIPE MOLD.

No. 386,979. Patented July 31, 1888.

Fig. 1.

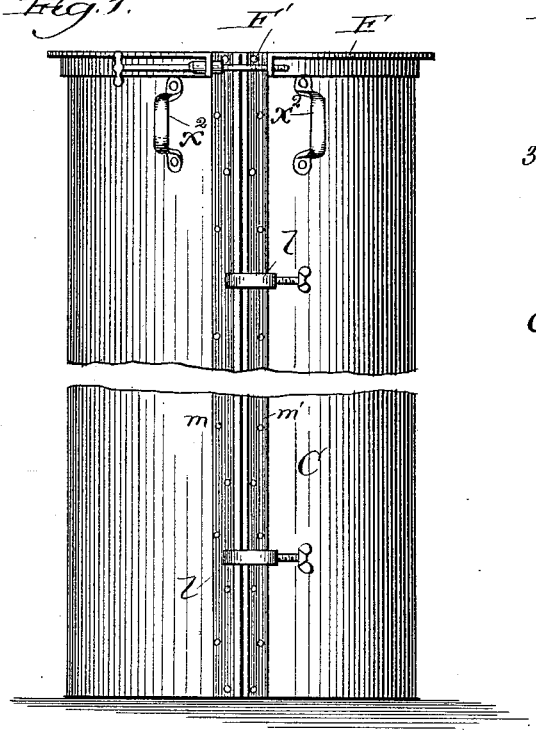


Fig. 2.

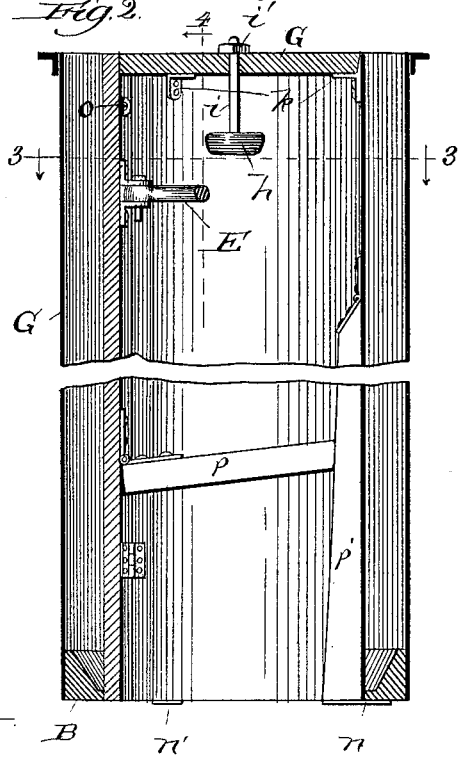


Fig. 3.

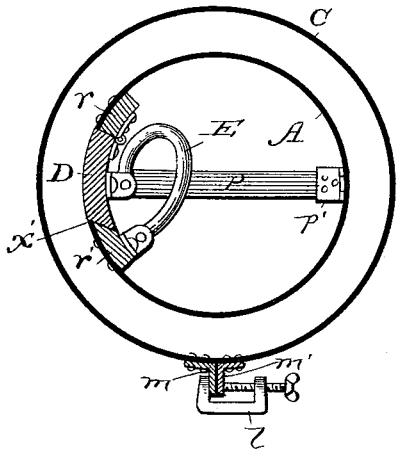
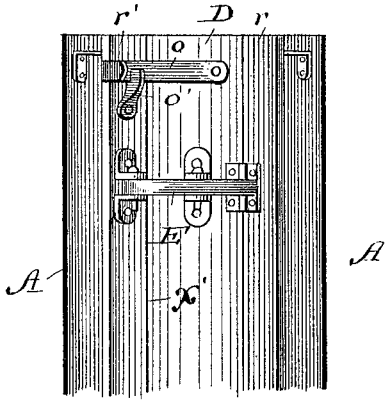


Fig. 4.



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By Dyrenforth & Dyrenforth
Attys.

(No Model.) 2 Sheets—Sheet 2.

L. G. HAASE.

CEMENT PIPE MOLD.

No. 386,979. Patented July 31, 1888.

Fig. 5.

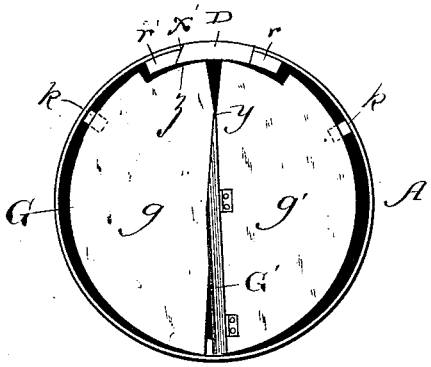


Fig. 6.

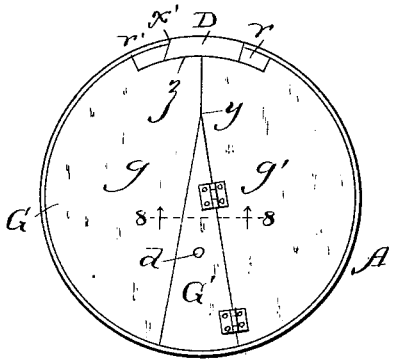


Fig. 7.

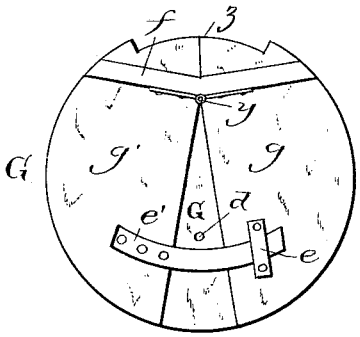
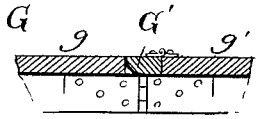


Fig. 8.



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UNITED STATES PATENT OFFICE.

LEO G. HAASE, OF OAK PARK, ILLINOIS.

CEMENT-PIPE MOLD.

SPECIFICATION forming part of Letters Patent No. 386,979, dated July 31, 1888.

Application filed August 16, 1887. Serial No. 247,056. (No model.)

To all whom it may concern:

Be it known that I, LEO G. HAASE, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Cement-Pipe Molds, of which the following is a specification.

My invention relates to an improvement in the construction of molds for use particularly in manufacturing sections of pipe for sewers, drains, and the like.

The object of my invention is to provide a simply-constructed and readily-operative form of collapsible mold for the purpose; and to this end my invention consists in the general construction of the collapsible core.

It further consists in providing a removable adjustable collapsible cover for the core; and it also consists in details of construction of my improved mold and in combinations of parts, all as hereinafter more fully set forth.

In the drawings, Figure 1 is a broken view in elevation of a collapsible jacket; Fig. 2, a vertical section through my improved mold; Fig. 3, a section taken on the line 3 3 of Fig. 2 and viewed in the direction of the arrows; Fig. 4, a broken section taken on the line 4 of Fig. 2 and viewed in the direction of the arrow; Fig. 5, a plan view of the mold, showing the collapsible cover in position and unexpanded; Fig. 6, a similar view of the collapsible cover expanded; Fig. 7, a plan view of the under side of the collapsible cover, and Fig. 8 a section taken on the line 8 8 of Fig. 6 and viewed in the direction of the arrows.

A is the core, formed, preferably, of sheet metal bent to a substantially cylindrical form, and having the adjacent edges along the line of separation thickened, preferably, by means of wooden blocks r and r', bolted to the inner sides near the edges, as shown.

The manufacture of cement pipe, to which my improved mold is adapted, requires that the core, and also the jacket surrounding it, shall be readily collapsible, and the reason for this requirement will be apparent from the following laconic description of the procedure of making the pipe.

A base-ring, B, is placed upon the ground or other support, when the collapsible core is inserted into it and expanded to cause it to fit tightly at its lower end inside the ring. The jacket C is then adjusted around the ring B and tightened to hug the same firmly. The material for the pipe—a mixture of Portland cement, gravel, and sand is what I employ—is shoveled into the space between the core and jacket and tamped down to produce the required homogeneous shell forming the pipe. This tamping produces such a tight fit between the core and jacket that it is impossible to remove the pipe in its fresh condition without breaking it unless it is loosened in its position. To effect the loosening, the mold is made collapsible, and, to avoid injury to the pipe in the soft condition of the material forming it, must be collapsed without jar, and therefore the collapsing must be accomplished without hammering.

The core A has an intervening door, D, hinged along the edge r and beveled at its free edge in one direction to cause it to fit the opposite bevel on the edge r', and thus produce a bevel, x', such as that already described in connection with Fig. 9. A horizontal yoke, E, comprising a strip or rod, preferably metal, bent substantially to the form shown, is pivoted at one end to the door D and at its opposite end to the edge r', and the door D is, preferably above the yoke, as shown, provided with a pivotal latch, o, to engage with a catch, o', on the edge r. A brace, p, is hinged inside the core toward its lower end to engage with a hinged cam-block, p', on the opposite side, and which is provided with a lip, n, on its lower end to extend underneath the ring B. The block p' is forced by the brace p against the resistance of a spring (which may be in the hinge, and is therefore not shown) to remove automatically the lip n from underneath the ring on collapsing the core. A similar lip, n', is also provided on the door D to extend underneath the ring, and the two lips serve to hold the core down against the tendency to raise it by the tamping in forming the pipe. The jacket C, also preferably formed, like the core, by bending sheet metal into the form of a cylinder, is provided on its edges of separation with angle-irons m and m' and on its body portion with handles x^2, by which to lift it.

To adjust the mold for its purpose, the core A

is inserted into the ring B and spread apart to produce a tight fit in the ring by forcing the door D between the edges r and r', and locking it by means of the latch o, and the core is then braced by wedging the brace p against the cam-block p', whereby the lip n is extended underneath the ring. The jacket C is then placed around the core, and a flanged split ring, F, is caused to surround the jacket at its upper end, and is tightened by means of a screw, F'. Clamps l are also employed to hold the edges together at the angle-irons m and m'.

To prevent waste of the material by dropping inside the core, and more especially to afford a table in convenient position for the operator, I provide a cover, G, for the core, which rests upon lugs k, placed in proper position on the inner side of the core. I may use a cover such as the one illustrated in Fig. 2, which is of disk shape, and must of course be cut out on its periphery to conform to the parts r D r'. The tamping of the material for the pipe, which is shoveled into the space between the core and jacket from the table afforded by the cover, tightens the core around the cover to an extent which renders necessary the provision of special means for removing it. I may use for the purpose the rod i, extending centrally through the cover and provided with a head, i', at its upper end, and a weight, h, at its lower end, whereby in raising the weight suddenly it strikes against the under side of the cover and forces it out of the core. Ordinarily, however, I prefer to use a collapsible cover—such, for example, as is illustrated in Figs. 5 to 8, inclusive. This cover is formed in two semicircular parts, g and g', each beveled from a point, y, to its edge, at which point the two parts are hinged together upon a brace, f, on the rear face of the cover, provided, also, toward the opposite edge with a guide-strap, e, on the part g, and a tongue, e', on the part g', working in the guide-strap. To adjust the cover in position, it is imposed upon the lugs k in the core, being cut out, as shown at z, to fit the parts r and r' and D, when the semicircular parts g and g' are spread apart to bring the beveled edges together, as shown in Figs. 6 and 7, and a wedge, G', is forced between the parts to keep them spread apart and tighten them in the core. I prefer to make the wedge G' of the form illustrated in Fig. 8, wherein it is shown as having one edge rounded upward from the lower side, and to hinge the wedge to the part g', as shown, where it is always in convenient position, and may be readily forced into place to expand the cover and withdrawn to collapse it, before collapsing the core, on inserting a suitable implement—such as a rod—into the hole d.

When a pipe is made, the mold is collapsed for removal from it to leave the pipe in the position in which it is manufactured until sufficiently hardened to be moved. To collapse the mold, the screw F' is loosened, which permits the ring F to expand by its own resilience when the clamps l are removed; and, thus released, the jacket C expands and becomes loosened from the ring B, thereby rendering its withdrawal a matter of ease. The core is collapsed by raising the latch o and brace p, when the door D swings back on its hinges. In swinging the door back on its hinges it moves into the yoke, thereby carrying the end of the latter with it—that is, backward—and, consequently, pulling the edge of the core, to which the opposite end of the yoke is pivoted at the block r', toward the edge r, thereby assisting in the collapsing operation. Besides, the yoke affords a form of toggle-lever, operating, when forced in a direction to introduce the door between the edges r and r', to spread the latter apart to admit the door. If it be required to start the door, this may readily be done by a slight pull on the hinged brace p.

While I employ, for the want of a better term, the word "cylinder," to express the form of the core and jacket, I do not wish to be understood as limiting myself to exact cylindrical form, as it is within the spirit of my invention to have the mold also oval in horizontal section or flaring.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a mold for making cement pipe, the combination of a collapsible hollow core and a removable collapsible cover on the upper end of the core, substantially as and for the purpose set forth.

2. In a mold for making cement pipe, the combination of a collapsible core and a collapsible cover, G, having two semicircular disks, g and g', beveled in opposite directions toward corresponding ends and hinged together, and a wedge, G, substantially as described.

3. In a mold for making cement pipe, a collapsible core and a collapsible cover, G, having two semicircular disks, g and g', beveled in opposite directions toward corresponding ends and hinged together, and a wedge, G', hinged to the edge of one of the semicircular disks, substantially as described.

4. In a mold for making cement pipe, the combination of a collapsible cover, G, comprising two semicircular disks, g and g', beveled in opposite directions toward corresponding ends and hinged together, a wedge, G', rounded on its under side and hinged to one of the semicircular disks, a guide-strap, e, and a tongue, e', substantially as described.

5. In a mold for making cement pipe, a collapsible core, A, comprising a hollow cylinder or approximate cylinder split longitudinally, and having a thickened edge, r, and a thickened beveled edge, r', a door, D, hinged to the edge r and beveled at its opposite edge, a yoke, E, pivoted at opposite ends, respectively, to the door and edge r', and a suitable locking device, o o', substantially as described.

6. In a mold for making cement pipe, a col-

lapsible core, A, comprising a hollow cylinder or approximate cylinder split longitudinally, and having a thickened edge, *r*, and a thickened beveled edge, *r'*, a door, D, hinged to the edge *r* and beveled at its opposite edge, a yoke, E, pivoted at opposite ends, respectively, to the door and edge *r'*, a suitable locking device, *o o'*, a brace, *p*, and a cam-block, *p'*, substantially as described.

7. In a mold for making cement pipe, the combination of a collapsible jacket in the form, substantially, of a hollow cylinder split longitudinally, and provided with means for holding the separate edges together and for releasing them to collapse the jacket, and a collapsible core, A, within the jacket, and comprising a hollow cylinder or approximate cylinder split longitudinally, and having a thickened edge, *r*, and a thickened beveled edge, *r'*, a door, D, hinged to the edge *r* and beveled at its opposite edge, a yoke, E, pivoted at opposite ends, respectively, to the door and edge *r'*, a suitable locking device, *o o'*, a brace, *p*, and a cam-block, *p'*, substantially as described.

LEO G. HAASE.

In presence of—
J. W. DYRENFORTH,
GRORGE C. COOK.