

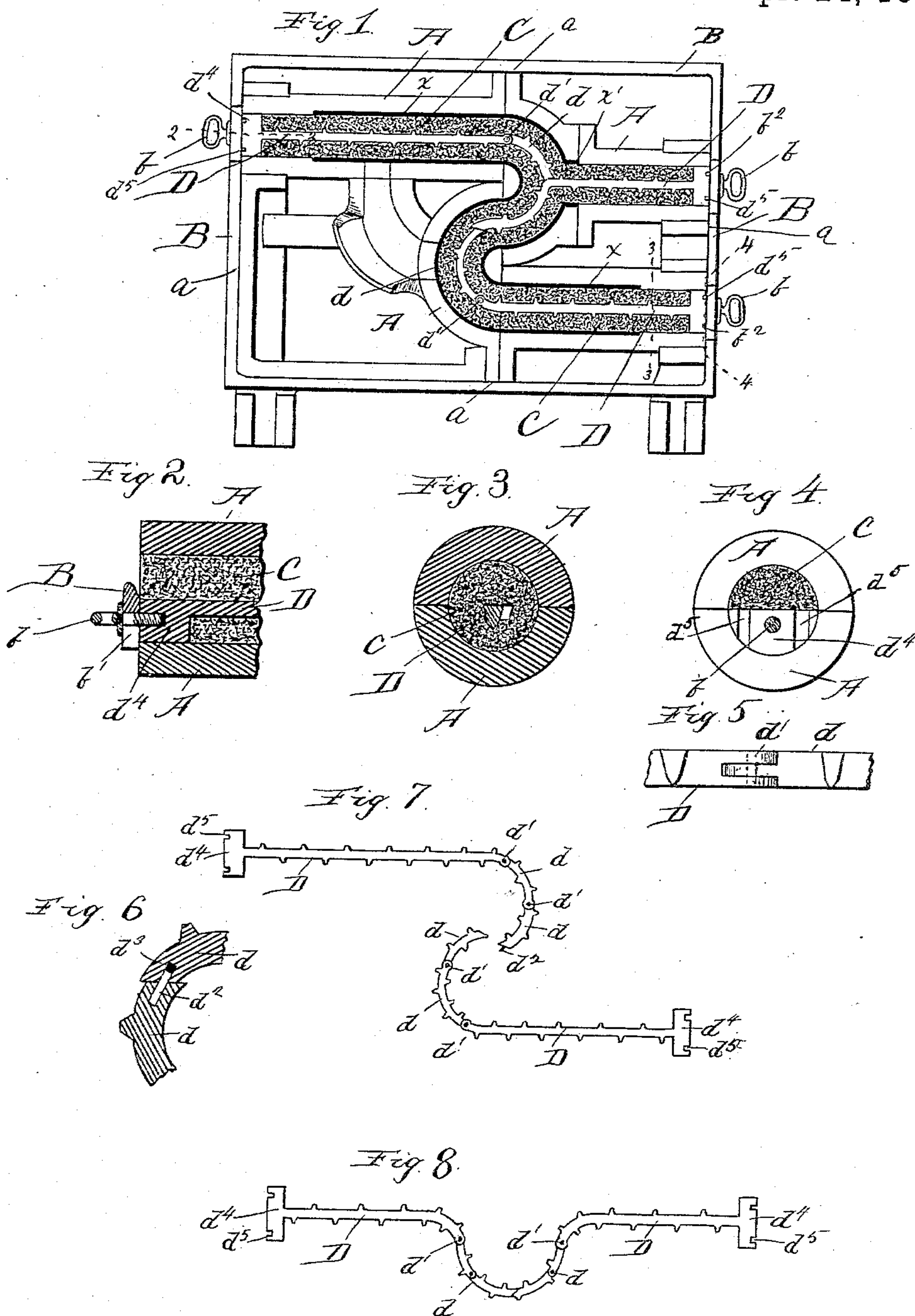
(No Model.)

P. RIETH.

CORE ARBOR FOR CASTING CURVED PIPE.

No. 381,645.

Patented Apr. 24, 1888.



Witnesses:  
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His Attorneys:



# UNITED STATES PATENT OFFICE.

PETER RIETH, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE L. WOLFF MANUFACTURING COMPANY, OF SAME PLACE.

## CORE-ARBOR FOR CASTING CURVED PIPE.

SPECIFICATION forming part of Letters Patent No. 381,645, dated April 24, 1888.

Application filed January 23, 1888. Serial No. 261,625. (No model.)

*To all whom it may concern:*

Be it known that I, PETER RIETH, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have  
5 invented a new and useful Improvement in Core-Arbors for Casting Curved Pipe and other Articles, of which the following is a specification.

My invention relates to the art of casting  
15 metal traps and other articles of a curved tubular shape, and more particularly to the construction of the arbor which supports the sand core of the mold.

The ordinary lead traps used in plumbing  
15 have usually a comparatively small bore, and being of an S, U, or other curved shape, it is impracticable to cast them by the ordinary means employed in casting other articles; and as it is essential that the lead trap when cast  
20 should have approximately the same thickness throughout, it is necessary that the core should be rigidly supported throughout its length to prevent sagging at the bends or intermediate points. Owing to the smallness of the bore,  
25 also, as well as to the bends, it is in fact impracticable to remove the sand core and its arbor from the cast trap by the ordinary method of shaking or rattling it out when the arbor is composed of a number of detachable  
30 pieces. The smallness of the bore and the bends render it impracticable to reach in with the hand or with an instrument and take hold of the inner pieces of the arbor. If the arbor should be composed of a number of loose detachable pieces, it would also not give the core  
35 sufficient rigidity at the bends and intermediate points to properly support it and produce a casting of even thickness throughout. In casting lead traps I find it essential, in order to  
40 produce a trap with the necessary smooth interior wall, to employ a green sand core as contradistinguished from a dry or baked core; and with such cores, as is well known, owing to the steam and gases produced in the mold  
45 when the metal is poured, the core is subjected to more or less strain or pressure during the pouring of the metal, and for this reason, also, it is essential to employ an arbor for the core capable of being rigidly held in place at all its  
50 parts.

My invention consists in an arbor-core com-

posed of a number of curved or bent sections hinged together and provided with a separable joint at an intermediate point, so that the intermediate hinged sections may be withdrawn  
55 with the end sections of the arbor to which they are hinged.

It also consists in the combination, with the hinged-section arbor, of a rigid supporting-frame in which the end sections of the arbor  
60 are mounted.

It further consists in the combination, with the hinged-section arbor, of a rigid supporting-frame and thumb screws or other clamping devices with which the end sections of the  
65 arbor are furnished, so that the arbor may be rigidly and firmly attached to its supporting-frame.

It further consists in providing the supporting-frame and the end sections of the arbor  
70 with registering lugs and grooves, to facilitate the proper adjustment or placing of the arbor in its supporting-frame.

It further consists in providing the supporting-frame of the arbor with slots to receive  
75 the clamp screws, so that the core and the casting formed around it may be removed from the supporting-frame by simply loosening the clamp-screws and without withdrawing them. This materially facilitates the operation.  
80

My invention further consists in the novel devices and novel combinations of parts or devices herein shown and described, and more particularly pointed out in the claims.

In the accompanying drawings, which form  
85 a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a plan view showing one-half of the flask, the arbor-supporting frame, the arbor, and also, in section, the sand core, and in this  
90 figure the heavy black line may represent the space between the core and the flask or the casting made therein. Fig. 2 is an enlarged partial vertical section on line 2 2 of Fig. 1. Figs. 3 and 4 are cross-sections on lines 3 3 and  
95 4 4 of Fig. 1. Fig. 5 is an enlarged detail view of one of the hinges uniting the sections of the arbor, and Fig. 6 is an enlarged detail section of the intermediate detachable joint between the two parts of the arbor. Figs. 7 and 8 are  
100 plan views of the arbor, showing the form of the same for making different kinds of traps.



Fig. 7 makes the same form of trap as Fig. 1, with the exception that the hand-hole or clean-out opening at the lower bend of the trap is omitted.

5 In said drawings, A represents the flask. It is preferably made of metal, and may be of any ordinary construction.

B represents the core-supporting frame, and C the sand core. The arbor inside the core, 10 and which supports the same, is composed of two or more end sections, D D, and one or more curved or bent hinged intermediate sections,  $d$ . The hinged sections  $d$  are united to the end sections, D, or to each other by vertical 15 pivots or hinges  $d'$ , so that such sections may only swing or move in a horizontal plane and be practically rigid in respect to any movement in a vertical plane. The preferred form of joint or hinge is shown in Fig. 5. The intermediate detachable joint, uniting the two 20 parts of the arbor in such way that they may be readily separated, preferably consists of a pin or lug,  $d^2$ , in one part, which enters a corresponding hole or recess,  $d^3$ , in the other part. 25 This is clearly shown in Fig. 6. Each of the end sections, D, is furnished at its extremity with an enlarged end or head,  $d^4$ , which fits flat and square against the face of the supporting-frame B, so that the arbor may be clamped 30 rigidly against the same. A thumb-screw or other equivalent clamping device,  $b$ , serves to rigidly attach the end sections, D D, of the arbor to the frame B. This clamp-screw fits in a vertical slot or notch,  $b'$ , cut in the lower 35 edge of the frame B. By simply loosening the clamp-screw the arbor and core may thus be removed from or placed in the supporting-frame B. To facilitate the proper centering of the arbor and core in the supporting-frame 40 B, I provide the frame B with registering lugs or guides  $b^2$ , and the head  $d^4$  of the arbor with corresponding grooves or recesses,  $d^5$ . Of course it will be understood that the lugs, if desired, may be placed on the arbor-head and 45 the grooves in the frame B.

As shown in Fig. 1, the arbor is provided with three end sections, D D D, one being used to form the hand-hole opening  $x'$  in the trap 50  $x$ . Before the thumb-screws or clamping devices  $b$   $b$   $b$  are tightened the lugs  $d^2$   $d^2$  of the hinged sections  $d$   $d$  may be readily fitted into their sockets  $d^3$   $d^3$  and the arbor put together, as shown in Fig. 1. When the parts are thus 55 placed together, the thumb-screws  $b$  are tightened, thus clamping the end sections, D D, of the arbor rigidly to the supporting-frame, and at the same time rigidly fixing the hinged sections  $d$   $d$  in place, as the lugs  $d^2$  cannot be disengaged from their sockets after the end sections, D D, are clamped rigidly to the frame 60 B. By this means I thus form a perfectly-rigid curved core-arbor of the desired shape, which will firmly support the core while it is being formed in the ordinary manner and 65 while it is being placed in the flask and the metal poured. After the casting is formed, the arbor-frame is removed from the flask, the

clamp-screws  $b$  loosened, and the arbor, core, and casting removed from the supporting-frame B, when the end sections, D, of the arbor, 70 with the sections  $d$  hinged thereto, may be readily pulled out of the casting or trap  $x$ . The heads  $d^4$  of the end sections are or should be made semi-cylindrical and fit in the flask to close the ends of the mold.

The supporting-frame B and the flask A are 75 provided with registering bearings  $a$ , so that they will fit properly together. The heads  $d^4$  also serve this same purpose.

I claim—

1. The core-arbor for casting, having sections hinged together, substantially as specified. 80

2. The combination, with a supporting-frame, of a core-arbor composed of sections 85 hinged together, substantially as specified.

3. The combination, with a supporting-frame, of an arbor composed of two or more end sections rigidly attached to said frame and one or more hinged sections, said arbor 90 being provided with an intermediate detachable joint, substantially as specified.

4. The combination, with a supporting-frame, of an arbor having two or more end sections, clamping devices for rigidly attaching 95 said end sections to said frame, and one or more hinged sections, said arbor being furnished at an intermediate point with a detachable joint adapted to be united or disunited only when the end sections or one of them are 100 unclamped or loosened, substantially as specified.

5. The combination, with supporting-frame B, furnished with slots or notches  $b'$ , of arbor D and clamp-screws  $b$ , mounted in said slots 105 or notches  $b'$ , substantially as specified.

6. The combination, with the supporting-frame B, of the arbor furnished with heads  $d^4$ , provided with registering sockets or grooves, said frame being provided with registering 110 lugs or guides, substantially as specified.

7. The combination, with frame B, having slots or notches  $b'$ , of an arbor composed of end sections, D D, and intermediate hinged 115 sections,  $d$ , said arbor being provided with a detachable joint at an intermediate point, and clamp-screws  $b$ , substantially as specified.

8. The combination of frame B, having slots or notches  $b'$ , of an arbor composed of end sections, D D, and intermediate hinged sections,  $d$ , said arbor being provided with a detachable joint at an intermediate point, and clamp-screws  $b$ , said arbor and frame being 120 provided with registering guides and grooves  $d^5$   $b^2$ , substantially as specified.

9. The combination, with supporting-frame B, of an arbor having three end sections, D D D, rigidly clamped to said frame, and intermediate hinged sections,  $d$   $d$ , substantially as specified. 125

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