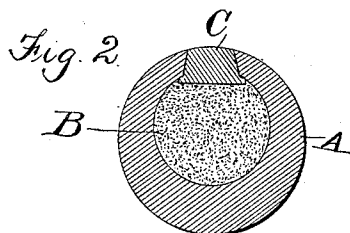
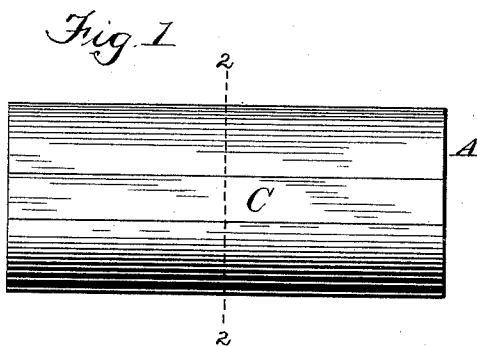


(No Model.)

W. C. WESTAWAY.
MANDREL FOR CASTING CHILLED PIPES.

No. 465,035.

Patented Dec. 15, 1891.



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WALTER C. WESTAWAY, OF DECORAH, IOWA.

MANDREL FOR CASTING CHILLED PIPES.

SPECIFICATION forming part of Letters Patent No. 465,035, dated December 15, 1891.

Application filed February 19, 1891. Serial No. 382,123. (No model.)

To all whom it may concern:

Be it known that I, WALTER C. WESTAWAY, a citizen of the United States of America, residing at Decorah, in the county of Winnes-
5 shiek, in the State of Iowa, have invented certain new and useful Improvements in Mandrels for Casting Chilled Pipes, of which the following is a specification.

Referring to the accompanying drawings,
10 wherein like reference-letters indicate like parts, Figure 1 is a side elevation, and Fig. 2 a section in line 2 2 of Fig. 1.

For many purposes in the industrial arts it is desirable to use metal pipes of smooth cy-
15 lindrical or substantially cylindrical bore, chilled on the inside. To cast such a pipe, it is necessary to cast the metal around a central mandrel or chill. It has, however, been found in practice that the contraction of the
20 chilling metal against the mandrel strains the walls of the pipe, and the mandrel then expands by the heat communicated to it from the pipe, increasing the strain to such an extent as often to burst the pipe and always to
25 render it weak and practically worthless unless cast very thick and heavy, and it is difficult to remove the mandrel from the pipe after the casting has been made.

The object of my invention is to so im-
30 prove the construction and operation of the mandrel or chill as to obviate the difficulties referred to; and the invention consists in the improved mandrel or chill herein described.

In the drawings, A indicates a hollow man-
35 drel, with its bore B somewhat eccentric to its periphery, and having from end to end at its thinner side a longitudinal division or opening, tapering outward in cross-section, and filled up when in use with a strip or key
40 C, of corresponding form. In preparing the mandrel for use the key C is inserted and held in place by any suitable elastic or yielding material—for example, by sand tamped in the bore of the mandrel, as indicated in
45 Fig. 2. With such a mandrel the contracting metal chilling around it forces the wedge-shaped key slightly inward against the resistance of the material in the bore, and at the same time by compressing the walls A it
50 springs or bends them inward at their divided

side tightly against the key, the eccentric bore causing the flexure to distribute itself with substantial uniformity throughout the entire periphery of the wall A, and thus pre-
serve the cylindrical form of the casting. 55 When the casting is completed, the sand is removed, the key dislodged inwardly, and the mandrel is then readily loosened and detached from the pipe. Instead of the metal key, the sand itself may be used as a key
60 by tamping it tightly into the dividing-space and smoothing and polishing the outer surface, in which case the dividing-space need not necessarily be made wedge shape in cross-
section. 65

By the word "pipes" as used herein I mean any tubular form, long or short, including wheel-hubs, journal-boxes, and similar ar-
ticles, as well as the articles commercially known as "pipes." 70

I find it easy, with mandrels or chills of the kind above described, to cast metal pipes of extreme thinness, and yet of great strength, with their inner surfaces chilled, smooth, and cylindrical, requiring no further finish
75 for ordinary uses, and with their outer surfaces unchilled and of great tensile strength. The interior surface of the pipe takes its form instantly upon the first contact of the hot
80 metal with the cold mandrel, and the latter then supports it sufficiently to prevent any alteration of such form, although yielding inwardly sufficiently to prevent its own ex-
pansion from unduly straining the surrounding pipe. 85

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

1. The improved mandrel or chill for cast-
ing purposes herein described, consisting of 90 an eccentrically-bored metal tube divided longitudinally at one side, with a metallic key interposed in the dividing-space, and with the center provided with a yielding material to hold the key in position, substantially as
95 herein set forth.

2. The improved mandrel or chill for cast-
ing purposes herein described, consisting of an eccentrically-bored tube divided by a lon-
gitudinal slot at the thinner side, and a fill- 100

ing for said bore and slot arranged to yield as the casting cools, substantially as described.

- 5 3. The improved mandrel or thill for casting purposes herein described, consisting of an eccentrically-bored tube divided by a longitudinal slot widening toward the center of the tube, a key fitting said slot and having a

broad head bearing against the edges of the inner surface of the tube, and a yielding filling for the bore to hold said key in place, substantially as described.

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Witnesses:

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