(Model.) 2 Sheets—Sheet 1.

C. G. & J. B. CURRY.

CORE FOR CASTING METAL PIPES AND CYLINDERS.

No. 419,187. Patented Jan. 14, 1890.

Fig. 1.

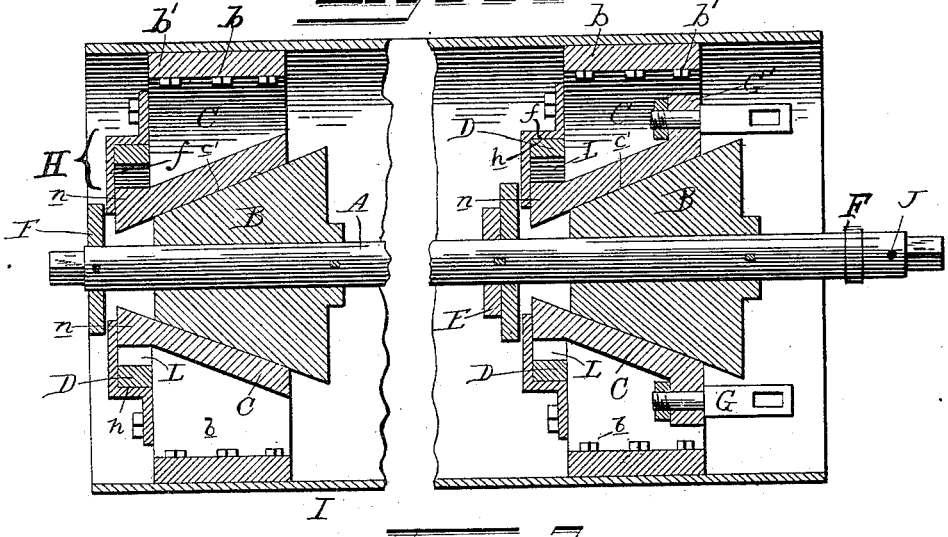
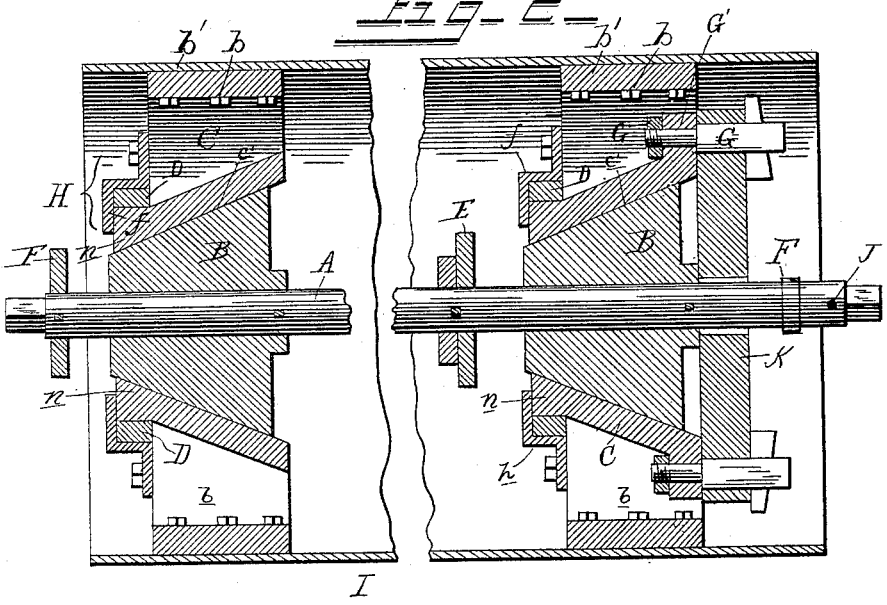


Fig. 2.



WITNESSES

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(Model.) 2 Sheets—Sheet 2.

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FIG. 3.

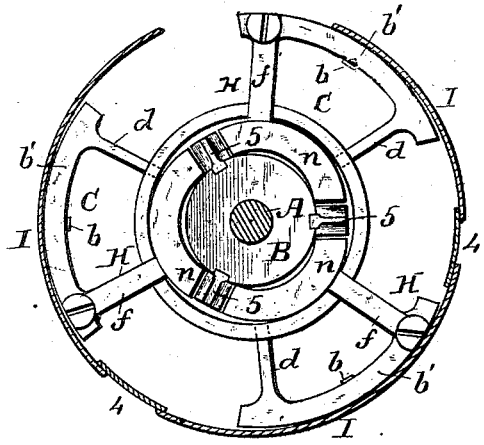


FIG. 4.

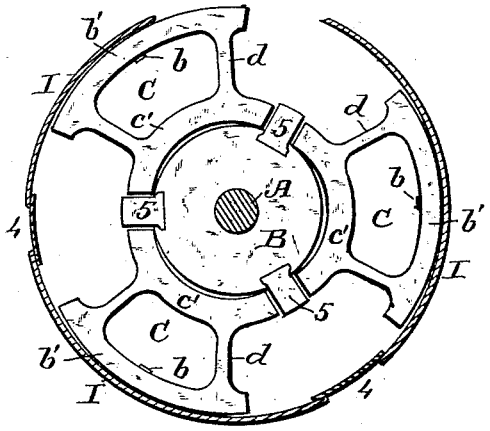


FIG. 6.

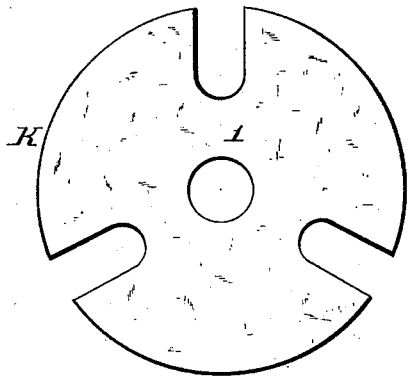


FIG. 5.

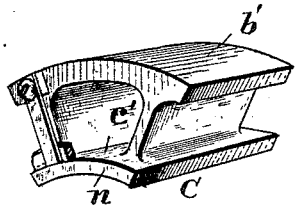
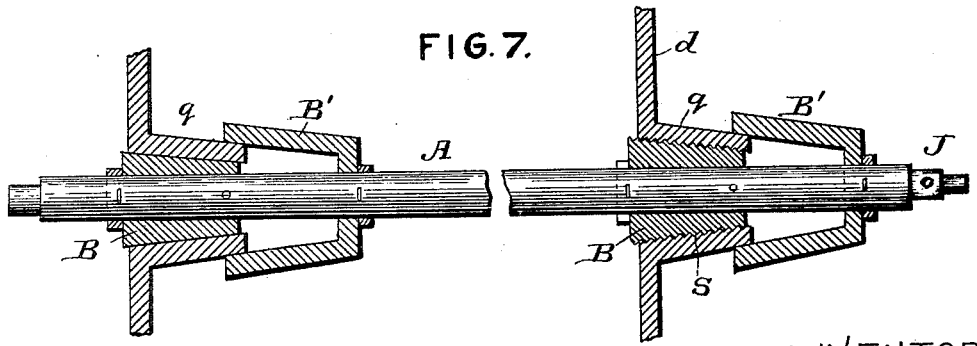


FIG. 7.



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UNITED STATES PATENT OFFICE.

CLARENCE G. CURRY AND JAMES B. CURRY, OF LOUISVILLE, KENTUCKY.

CORE FOR CASTING METAL PIPES AND CYLINDERS.

SPECIFICATION forming part of Letters Patent No. 419,187, dated January 14, 1890.

Application filed May 11, 1889. Serial No. 310,436. (Model.)

To all whom it may concern:

Be it known that we, CLARENCE G. CURRY and JAMES B. CURRY, citizens of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Cores for Casting Metal Pipes and Cylinders; and we do 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 the letters and figures of reference marked thereon, which form a part of this specification.

Our invention has reference to adjustable cores used in casting metallic pipes or cylinders; and it consists in the improved construction hereinafter described and set forth, whereby the general arrangement of parts is simplified and the operative qualities of the device rendered more positive and certain.

In the accompanying drawings, forming part of this specification, Figure 1 is a longitudinal sectional view of a core embodying our improvements, showing the parts preparatory to being expanded. Fig. 2 is a detail sectional view showing the parts after being expanded. Figs. 3 and 4 are transverse sectional views taken on opposite sides of the expanding plugs and webs. Fig. 5 is a detail perspective view of one of the webs, showing its flange with a portion of the ring held thereon. Fig. 6 is a detail view of the locking-frame, and Fig. 7 is a modification.

As will be understood, the general purpose and object of variable core structures is to dispense with the use of hay rope for wrapping the core-barrels, the burning off of which rope enables the core to be drawn from the casting, which, in the absence of said rope, would contract, when cooling, upon the unyielding core, prevent its being drawn, and result in many cases in the cracking or splitting of the casting. Several forms of variable contrivances have been devised; but in all cases whereof we are advised they comprise too many parts, are therefore cumbersome and expensive, and hence cannot be operated with the convenience, economy, and dispatch so requisite in pipe-casting operations.

By our improvements we remedy the objections noted and produce an adjustable core possessing superior advantages.

Referring to the accompanying drawings, F F are set-collars attached to the central shaft A and form the inner limits of the journal portions of the shaft A when it is placed in bearings to have the loam covering applied, &c. Said shaft A has keyed or otherwise secured thereon at about the points indicated two metal cones or tapering plugs B B, each having its tapering portion extending in a like direction. Several metal sections I I I conjointly form a cylinder. The adjacent longitudinal edges of the sections are adapted, when the device is contracted, to set close together. Each section has integral with or secured on its inner side and near one of its edges a curved supplemental strip 4, which is bolted to its section and has its free portion lying close to the inner face of the edge portion of the adjacent section.

A metal brace or web C, of the form shown in Fig. 5, has its rim perforated for the passage of securing-bolts *b*, which rigidly connect said web to one of the sections I. Of course it will be understood that the face of the outer part *b'* of the web C is curved to correspond with the interior of the section I, so that the web and section can bear positively upon each other.

There are several of the webs C, and each extends radially toward the center of the cylinder presented by the sections I I I. The inner portion *c'* of each web C is inclined longitudinally and curved transversely to correspond with the face of the metal plug adjacent, and lugs *n* form extensions of said end face and are inclined correspondingly. The radial parts *d* of each web are perforated, and each has secured thereto a bracket H, stud-bolts passing through said bracket and perforation in part *d*. A portion *f* of each bracket is offset to form between it and the face of the web a space L, limited by the lug *n* and shoulder *h* of the bracket. A ring D is seated in the space L and extends around so as to embrace the lugs *n* of the several webs. The adjacent faces of the lugs *n* and the ring D are parallel, as shown in Fig. 1, so that there will be no binding or jamming of the parts when the core is expanded to its

limit. The portion c' of each of the webs at one end of the device is provided integrally on its outer side with a lug G′, perforated for the reception of the round shank of a slotted anchor-bolt G, the projecting end of the round shank being screw-threaded for the engagement of a fastening-nut. In Fig. 6 is shown a circular plate or casting K, comprising a central portion 1, having a suitable opening for the passage of the shaft and provided with radial slots adapted to receive the ends of the anchor-bolts. The office of this casting K is to drop over the anchor-bolts and shaft, so that the several sections can be locked in an expanded position. The extremities of the bolts G extend beyond the frame K, and are pierced transversely by square openings, through which wedge-shaped keys M are driven to secure the frame K to the sections C.

In practice, assuming the parts to be in the position indicated in Fig. 1, it will only be necessary to shift the shaft longitudinally until the plugs have expanded the barrel to the desired extent, as shown in Fig. 2, after which the covering of loam can be applied. As the barrel-sections recede from each other under the action of the plugs, the plates 4 move with their respective section, so that the spaces between are always covered and the continuity of the cylinder always maintained intact. After the pipe has been cast the core may be quickly and conveniently withdrawn by reversing the movement of the shaft and its plugs, so that the webs and their sections can be contracted. By locating the plates 4 as described they do not constitute an objectionable projection upon the outer face of the core, but, on the contrary, are on the inner side and out of the way. Furthermore, no matter to what degree the sections are expanded, the spaces between the edges, backed by the plates 4, always form seats for the loam, while all tendency of the hot metal to force its way through the covering is resisted by the plates.

E is a collar fixed rigidly to the shaft A at a suitable distance from the taper plugs, said collar being adapted to take the entire weight of the core when it is withdrawn from the casting.

From the foregoing it will be seen that the improved core is much more simple in its construction and operation than in any device of the character heretofore devised. The interior operating devices are located at only two points, so that the body of the cylinder is unobstructed, and hence the entire arrangement is comparatively light and readily handled.

In Fig. 7 a modified arrangement is shown, wherein the inner ends of the webs are provided with inwardly-extending arms q, inclined to accord with the adjacent plug B. The shaft A is provided with cone-shaped sleeves B′, which travel with the shaft and serve to clamp the arms upon the plugs. In order to positively operate the core by expanding or contracting for one or more sizes, as in the arrangement last described, one of the cones or plugs is threaded on its outer face, as indicated at s, to engage similar threads on the inner face of the arm q.

The shaft A is provided near one end with an opening J for the engagement of the clevis of the hoisting device used to raise the core out of the flask.

By reference to Figs. 3 and 4 it will be noted that each plug B has a series of tapering longitudinal ribs 5, each of which fits between the faces of the adjacent edges of the inner portions c' of the webs. These ribs 5 serve to hold and brace the several parts in their relative position when expanded under the action of the plugs.

We claim—

1. The combination, in an adjustable core, of a series of outer sections, a series of radial webs, each detachably secured to one of said sections, inclined at its inner end and extended laterally and longitudinally, and a longitudinally-movable shaft having tapered plugs to contact with the inclined inner ends of said webs and provided with a series of ribs to fit between the adjacent edges of the inner portion, substantially as set forth.

2. The combination, in an adjustable core, of a series of sections, a series of radial webs, each detachably secured to one of said sections, each laterally extended and inclined at its inner end and provided with a lug n, a longitudinally-movable shaft, and tapered plugs B, the latter having ribs to fit between the adjacent edges of the inner portions of the webs, together with a ring embracing said lugs, substantially as set forth.

3. The combination, with the sections and radial webs connected thereto having projections and inclined on their inner ends, of a longitudinally-movable shaft, tapering plugs mounted thereon and bearing against said inclined ends, brackets on said webs, and a ring confined thereby and embracing said projections, substantially as set forth.

4. The combination, with the cylinder-sections and open radial webs detachably secured thereto and each laterally extended and inclined on its inner end and provided with front lugs n, of a ring embracing said lugs, a longitudinally-movable shaft and tapered plugs thereon, perforated lugs formed in each of the webs at one end of the device, and anchor-bolts seated in said lugs, and a casting K, embracing said anchor-bolts and connected thereto to lock the same, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

CLARENCE G. CURRY.
JAMES B. CURRY.

Witnesses:
CHAS. H. BODE,
JOSEPH WAGNER.