(No Model.)

J. W. HOLMES.

COLLAPSIBLE CORE BARREL.

No. 530,108. Patented Dec. 4, 1894.

Fig. 1.

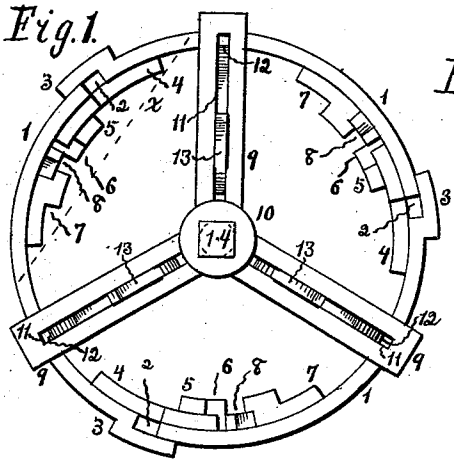


Fig. 5.

Fig. 2.

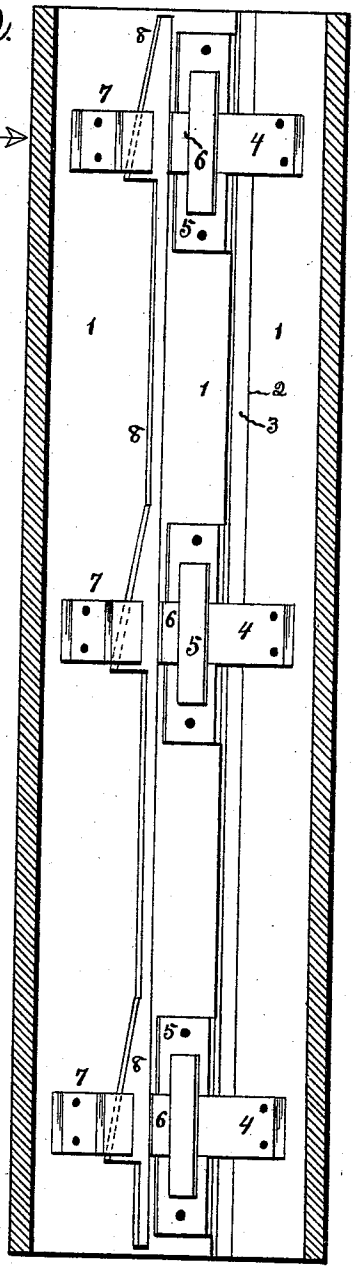


Fig. 4.

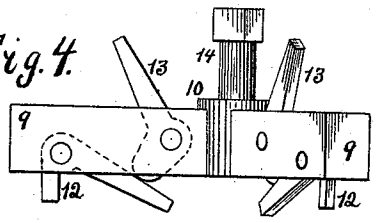


Fig. 6.

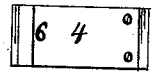


Fig. 3.

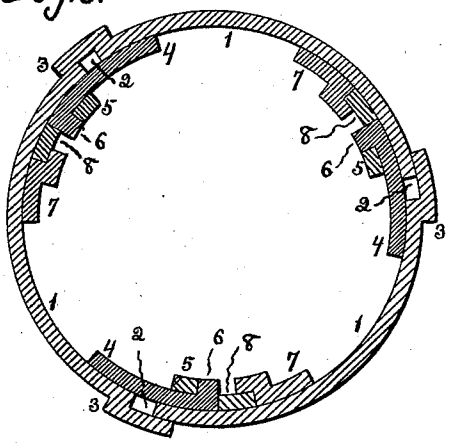
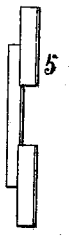


Fig. 7.



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JOHN WILLIAM HOLMES, OF LOUISVILLE, KENTUCKY.

COLLAPSIBLE CORE-BARREL.

SPECIFICATION forming part of Letters Patent No. 530,108, dated December 4, 1894.

Application filed July 25, 1893. Serial No. 481,456. (No model.)

To all whom it may concern:

Be it known that I, JOHN WILLIAM HOLMES, a citizen of the United States, and a resident of Louisville, in the county of Jefferson, State of Kentucky, have invented a new and useful Contracting Core-Center, of which the following, in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to collapsible core-barrels used in the manufacture of cast iron pipe or analogous cylindrical castings, and especially to those core-barrels composed of staves and revolved while applying loam to the exterior; and the object of my invention is to provide a comparatively light core-barrel composed of staves and of simple and durable construction, of course capable of contraction sufficiently to be removed after the fluid metal has solidified in the mold around it, and so formed as to be without mechanism the operation of which may be hindered through contact with fluid metal spilled and solidified thereon.

Achieving the desired attainment my invention consists, first, in various constructions and combinations of parts concerning a contracting core-barrel as will be hereinafter described and particularly pointed out in the claims.

My invention further consists in an axial appliance two of which I temporarily secure to my core-barrel for the purpose of rotating it to make the core.

Contractile core-barrels composed of staves and turned on axes are not new, but as constructed and used prior to my invention, such have been, so far as I am aware, ponderous contrivances all either having inseparable axial pivots or mechanism extending both centrally and diametrically internally, and mostly deficient in that the mechanism employed for effecting the collapsibility is liable to become clogged through arresting the fall of fluid metal that may be accidentally or otherwise spilled during the process of filling the mold.

My improved core-barrel has none of the objectionable features of the said kind heretofore used, it having, when in the mold, an unobstructed internal central orifice extending, and of equal diameter throughout, the entire length thereof. I accomplish the desired results with devices illustrated by the accompanying drawings, in which—

Figure 1 represents a plan or end view of a core-barrel embodying my invention, showing an axial appliance attached thereto. Fig. 2 represents a longitudinal sectional view of the same, showing the axial appliances separated therefrom, the plane of section being indicated by the line *x*, Fig. 1. Fig. 3 represents a transverse sectional view of my core-barrel, also with said appliances removed, the plane of section being denoted by the arrow, Fig. 2. Fig. 4 represents a view in elevation of the axial appliance. Fig. 5 represents an elevational view of one of the lugs I attach to the core-barrel for engagement with wedge bars to expand the barrel. Fig. 6 represents a view in elevation of one of the shouldered strips that are secured to the barrel, for engagement with said wedge-bars in correspondence with said lugs to expand the barrel, and for other purposes information respecting which will be hereinafter fully imparted. Fig. 7 represents an elevational view of one of the stave cap projections which are fastened to the barrel to loosely confine said strips and engage the same for preventing displacement of the staves and limiting the expansibility of the barrel.

In said drawings similar numerals of reference signify corresponding parts throughout the several views.

Referring to the drawings, 1 designates the movable segments or staves of which the core-barrel is essentially composed. 2 designates the space between the longitudinal edges of the staves when the barrel is expanded. 3 designates supplementary staves or strips formed integral with the staves essential for covering said spaces therebetween and preventing whatever substance with which it may be necessary to coat the barrel from entering therein.

The parts thus specifically described in the immediate preceding paragraph are old and are hereby disclaimed. I have disclosed my core-barrel made with three essential staves. It may, however, include any other suitable number.

The means I adopt for retaining the staves in barrel shape and permitting their required

movement I will now divulge my knowledge of. Each stave may have riveted or otherwise rigidly secured thereto upon the inner side, adjacent to one of its longitudinal edges, a series of segmental strips 4 each extending beyond said edge and adapted for sliding engagement with an adjoining stave. Each stave has also firmly fastened thereto upon the inner side, adjacent to its other longitudinal edge, a series of cap projections 5 each loosely confining one of said strips of an adjoining stave and allowing movement of the staves necessary for the contraction and expansion of the barrel. As already described it is rendered obvious that the parts 4 and 5 hold the staves in barrel form and prevent longitudinal displacement. The contraction of the barrel is limited of course by engagement of the longitudinal edges of the staves with each other. It remains to be ascertained how the expansion is limited.

To limit the expansion of my core-barrel I provide each strip 4 with a shoulder 6 formed integral therewith to abut against an edge of a cap projection 5.

I will now proceed to state how my core-barrel is preferably expanded and the staves then securely locked. For this purpose each stave is provided with a series of lugs 7 each rigidly secured to the stave's inner side in line circumferentially with a strip 4 of an adjacent stave, and each stave is also supplied with a lengthwise movable wedge bar 8. The three wedge-bars are adapted for engagement with said lugs and strips to move the staves for expansion of the barrel. These wedge bars lock the staves, and thus prevent contraction of the barrel, by being properly entered between the parts 4 and 7; and the expansion of the barrel is limited, as is most clearly shown in Fig. 2 of the drawings.

My core barrel being in the expanded condition with the staves locked it is then as a core-center inserted in the mold. It being hollow its entire length whatever fluid metal is spilled inside the barrel will freely fall therethrough. At the proper period the collapsibility of the barrel is permitted by moving the wedge bars in a direction obviously understood by Fig. 2 of the drawings.

I will now detail the construction and use of my axial appliances. It being necessary to revolve my core-center to make up the core I employ for this purpose two like chuck contrivances removably applicable to the ends of the barrel and each comprising framework arms 9 adapted to engage the ends of the staves, and radiating from a common central body 10, and which arms are each slotted as at 11 for the reception of a jaw 12 pivoted therein to the arm and a cam lever 13 also pivoted therein to the arm, the cam lever being for engagement with the tail of the jaw to force the jaw against and hold it in contact with the inner side of a stave of the core-barrel. Each chuck contrivance has an axial spindle 14 formed integral with its central body whereby the core-barrel may be mounted and revolved in suitable bearings. Thus the axial appliances are preferably constructed and coupled with the core barrel.

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

1. A collapsible core-barrel composed of a series of staves so articulated together as to be each movable without disassociation from barrel form, such barrel having an unobstructed central opening its entire length, and each stave having movable therewith and secured thereto adjacent to a longitudinal edge thereof a suitable number of strips each extending beyond said edge and projecting over an adjoining stave, and each stave being also provided with a corresponding number of caps movable therewith and secured thereto for loosely confining the said strips of an adjoining stave, said strips and said caps being adapted, for sliding engagement the one with the other to permit movement of the staves, and for holding in barrel shape, and preventing longitudinal displacement of, the staves, substantially as described.

2. A collapsible core-barrel composed of a series of staves so inter-locked as to be each movable without dispersal from barrel form, such barrel having an unobstructed central orifice the entire length thereof, and each stave having movable therewith and secured thereto adjacent to a longitudinal edge thereof a suitable number of shouldered strips each extending beyond said edge and projecting over an adjoining stave, and each stave being also provided with a corresponding number of cap projections movable therewith and secured thereto for loosely confining and engaging the said shouldered strips of an adjoining stave, said shouldered strips and said cap projections being adapted for sliding engagement the one with the other to allow movement of the staves, for retaining in barrel shape, and preventing longitudinal displacement of, the staves, and for limiting the expansibility of the barrel, substantially as described.

3. In a collapsible core-barrel composed of any desirable number of staves so connected together as to be each movable without displacement from barrel form, a stave having movable therewith and secured thereto adjacent to a longitudinal edge thereof a suitable number of strips each extending beyond said edge and projecting over an adjoining stave that is provided with a corresponding number of caps movable therewith and secured thereto for loosely confining said strips, those strips and said caps being adapted for sliding engagement with each other to permit movement of the staves and acting to prevent longitudinal movement of, and retain in barrel shape, the staves, that adjoining stave being also provided with a corresponding number of lugs movable therewith and secured thereto and a longitudinally movable

wedge bar for engagement with its lugs and said strips to expand the barrel, substantially as described.

4. In a collapsible core-barrel composed of any desirable number of staves so united as to be each movable without removal from barrel form, a stave having movable therewith and secured thereto adjacent to a longitudinal edge thereof a suitable number of shouldered strips each extending beyond said edge and projecting over an adjoining stave that is provided with a corresponding number of projections movable therewith and secured thereto for engagement with the said shouldered strips, those strips and said projections being adapted to limit the expansibility of the barrel, that adjoining stave being also provided with a corresponding number of lugs movable therewith and secured thereto and a longitudinally movable wedge-bar for engagement with its lugs and said strips and used in connection therewith and with said projections to expand the barrel and keep it thus, substantially as described.

5. In a collapsible core-barrel composed of any desirable number of staves so articulated together as to be each movable without disassociation from barrel form, a stave having movable therewith and secured thereto adjacent to a longitudinal edge thereof a suitable number of shouldered strips each extending beyond said edge and projecting over an adjoining stave that is provided with a corresponding number of cap projections movable therewith and secured thereto for loosely confining and engaging the said shouldered strips, those strips and said cap projections being adapted for sliding engagement with each other to permit movement of the staves and acting to prevent longitudinal displacement of, and retain in barrel shape, the staves, and to also limit the expansibility of the barrel, that adjoining stave being also provided with a corresponding number of lugs movable therewith and secured thereto and a longitudinally movable wedge-bar for engaging its lugs and said strips and used in connection therewith and with said projections to expand the barrel and retain the same in that condition, substantially as described.

6. The combination with a contractile core-barrel, of apparatus applicable to an end of such barrel whereby the same may be revolved, consisting, essentially, in framework having an axial spindle and provided with a series of pivotal jaws and a series of cam levers in connection with such jaws, each cam lever being adapted to bear against the tail of a jaw for forcing that jaw against the barrel to couple the framework therewith, said cam levers being so shaped that they lock said jaws in contact with the barrel, independently of other mechanism, substantially as shown and described.

7. A core-barrel composed of movable staves, each stave having secured thereto lugs, shouldered strips, and projections, and each stave being also provided with a wedge bar for use in connection with said lugs, strips, and projections, to expand the barrel and lock it in that condition, this core-barrel having an unobstructed central orifice its entire length, in combination with apparatus applicable to an end of said barrel whereby the same may be revolved, consisting, essentially, in framework having an axial spindle and provided with a succession of pivotal jaws and a succession of cam levers for forcing said jaws against the barrel to couple the framework therewith, substantially as described.

As evidence that the foregoing is claimed by me I have hereunto affixed my signature in the presence of two subscribing witnesses.

JOHN WILLIAM HOLMES.

Witnesses:
EDWARD PHILIP KOETTER,
WILLIAM SACKETT.