

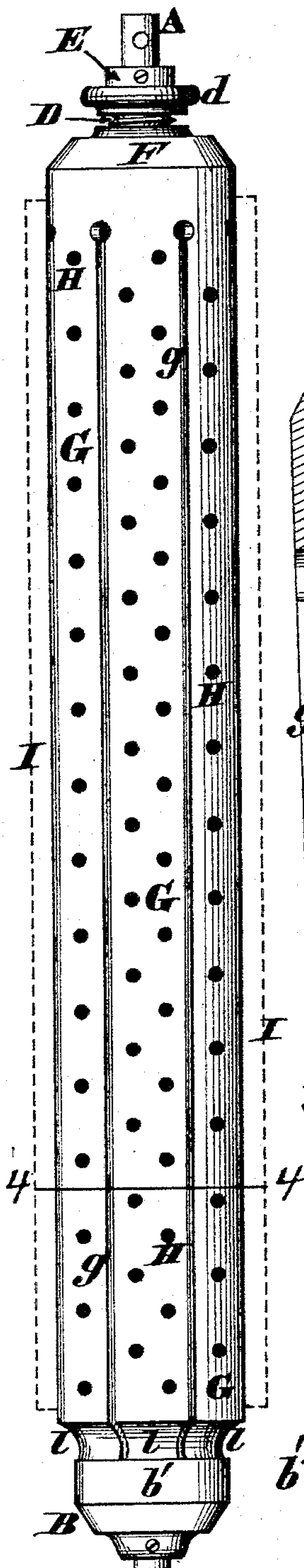
(No Model.)

D. G. COPPIN.
COLLAPSIBLE CORE BARREL.

No. 369,317.

Patented Sept. 6, 1887.

FIG. 1.



Attest.
S. S. Carpenter
Francis B. James

FIG. 2.

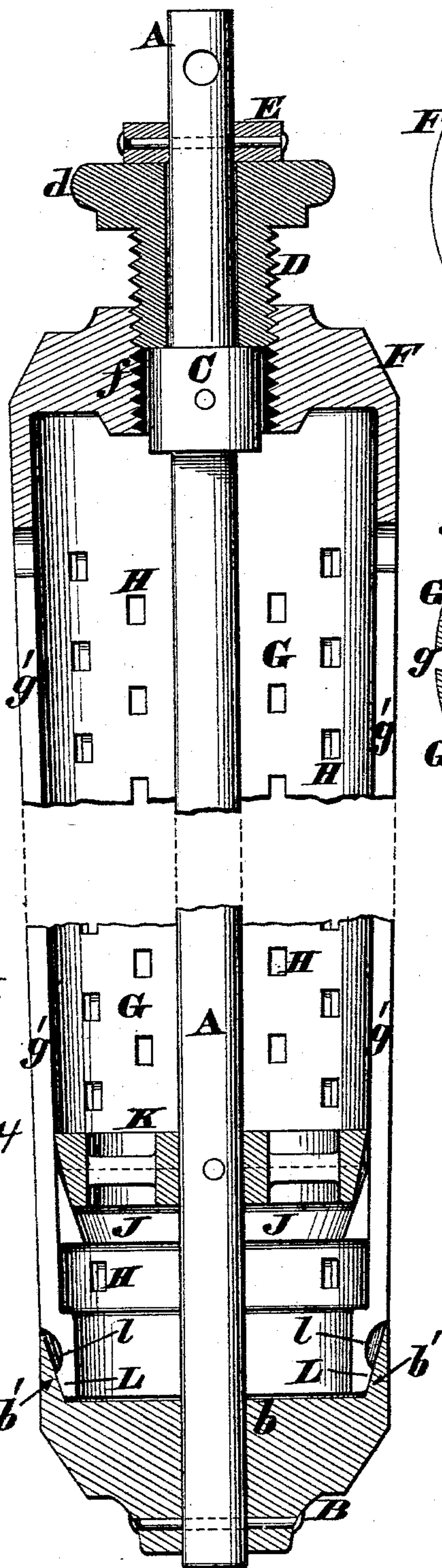


FIG. 3.

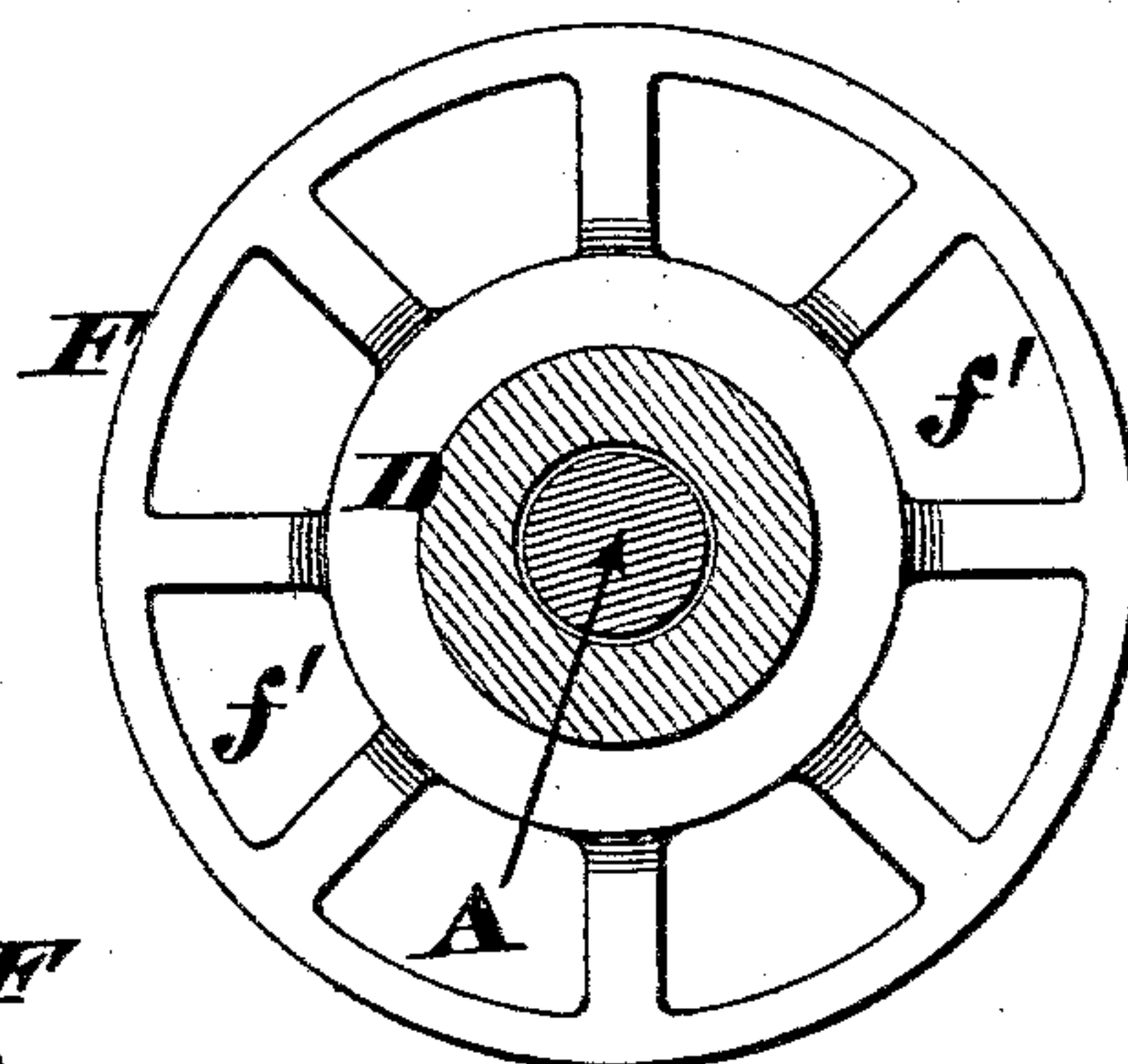


FIG. 4.

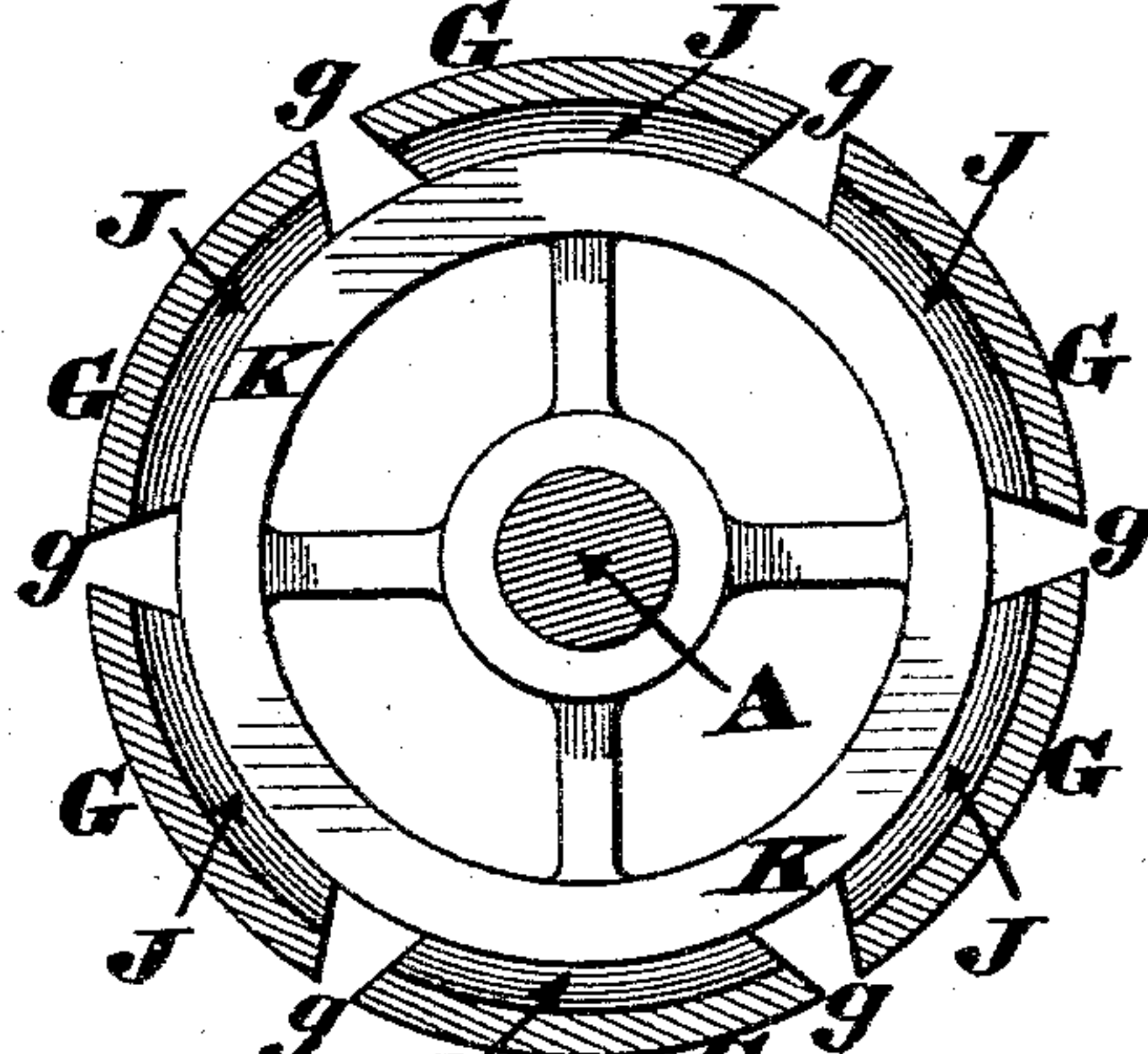
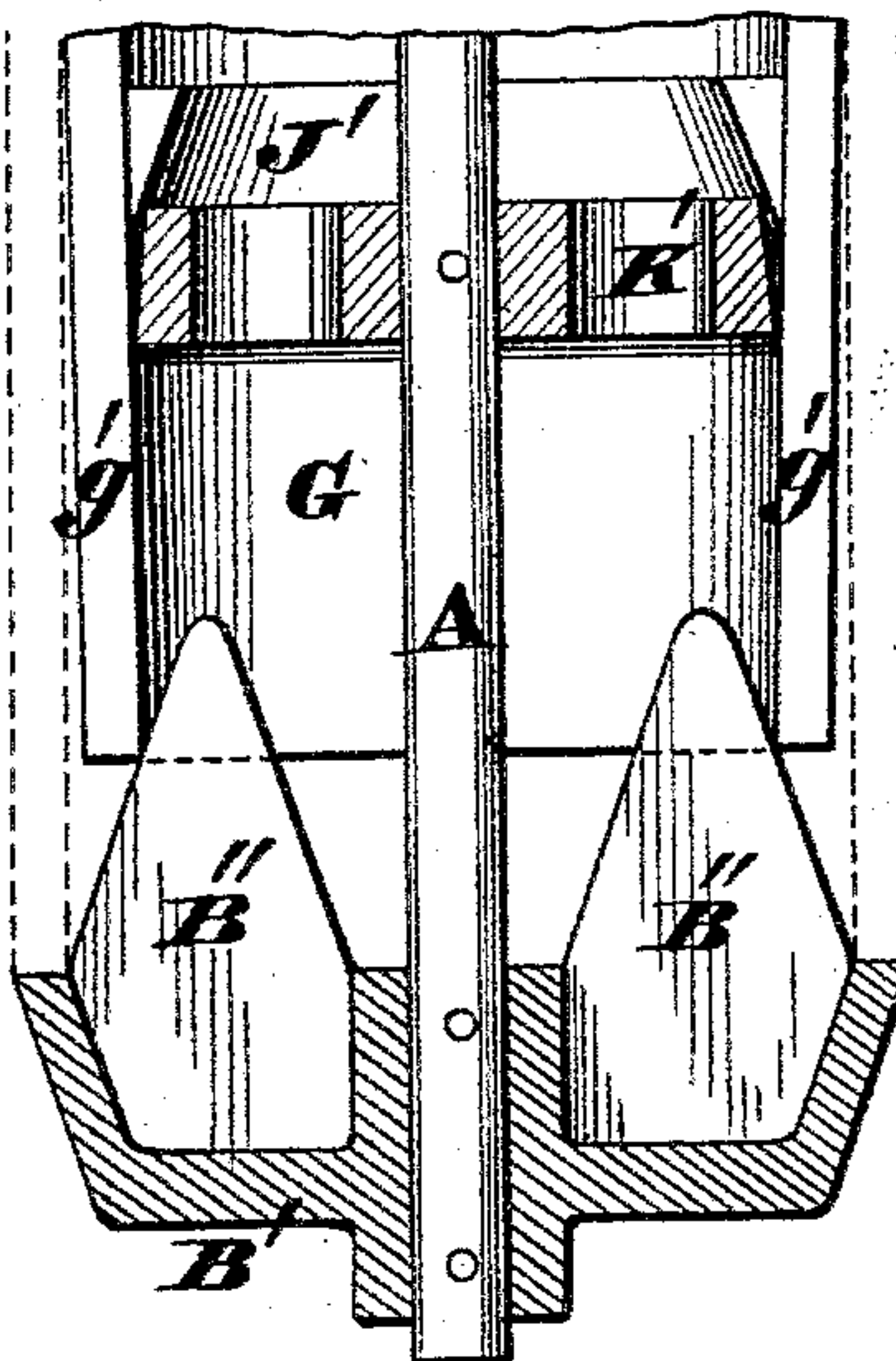


FIG. 5.



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UNITED STATES PATENT OFFICE.

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COLLAPSIBLE CORE-BARREL.

SPECIFICATION forming part of Letters Patent No. 369,317, dated September 6, 1887.

Application filed June 23, 1887. Serial No. 242,229. (No model.)

To all whom it may concern:

Be it known that I, DANIEL G. COPPIN, a citizen of the United States, residing at Newport, in the county of Campbell, State of Kentucky, have invented certain new and useful Improvements in Collapsible Core-Barrels, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to those metallic core-barrels which are capable of being readily collapsed, so as to facilitate their removal from the pipes or other castings formed around them; and the first part of my improvements
15 consists in means for effecting such a contraction by shifting the barrel longitudinally of the core-bar, thereby obtaining a decided advantage over the old-fashioned devices, as hereinafter more fully described.

20 The second part of my improvements comprises a novel combination of devices, whereby this shifting of the barrel longitudinally of the core-bar is readily accomplished by the molder, as hereinafter more fully described.

25 The third part of my improvements consists in such a construction of the barrel as will cause the clay or loam coating to be readily sheared or cut off in the act of collapsing said barrel, as hereinafter more fully described.

30 In the annexed drawings, Figure 1 is a side elevation of the preferred form of my collapsible core-barrel in its normal or expanded position, the clay or loam covering around the same being indicated by dotted lines.

35 Fig. 2 is an enlarged axial section of said barrel in its contracted or collapsed condition, the central portion of the barrel and core-bar being broken away. Fig. 3 is a plan of a modified form of the upper head of the barrel, the adjuster and core-bar being sectioned.
40 Fig. 4 is an enlarged transverse section of the expanded barrel, taken at the line 4 4 of Fig. 1. Fig. 5 is an axial section of a modification of the invention.

45 The supporting member of my core-barrel is a rigid tube or core-bar, A, to whose lower end is attached a head, B, having a chamber, b, and an inwardly-sloping annular rim, b', for a purpose that will presently appear. Securely fastened to this bar, and near the upper
50 end thereof, is a collar, C, upon which rests a screw-threaded adjuster, D, having a hand-

wheel or other portion, d, wherewith it is readily turned, as occasion requires.

E is another collar secured to the core-bar 55 A in any suitable manner, the adjuster D being free to turn between these collars C E, but incapable of longitudinal shifting upon said bar. The screw of adjuster D engages with a nut or female thread, f, of the upper 60 head, F, of the collapsible core-barrel G. This head may be solid, as seen in Fig. 2, although it is preferred to furnish said head with openings f', as represented in Fig. 3, to facilitate
65 the escape of gas and other vapors from the interior of the barrel, the body of the latter being cylindrical when in its normal or uncontracted condition, and being composed of metal or any suitable composition of metals.

In order to render this barrel collapsible, it 70 is slotted longitudinally from near the head F down to its extreme lower end, the exact number and size of said slots being immaterial. As seen in Figs. 1 and 4, six of these slots g are represented, while Figs. 2 and 5 indicate 75 that a pair of diametrically-opposite slots, g', may be employed, if desired. Furthermore, Fig. 4 shows that the slots are wider at the rear than in front, thereby affording sharp edges to the segments G, which edges sever 80 the clay coating at the proper movement.

Each segment or section G of the barrel is pierced with small openings H, of any size and shape that will afford a secure anchorage for the customary clay or loam covering, the 85 latter being indicated by the dotted lines I in Fig. 1. Again, each segment of the barrel or shell has near its lower end an internal inclined projection, J, which projection at the proper moment impinges against the beveled 90 periphery of a wheel, disk, or spider, K, said device K being fixed to the core-bar A. The extreme lower end of each segment has a chamfered bearing, L, adapted to slide against the inclined annular rim b' of the lower head, B, 95 said segments being grooved above these bearings, as at l, to reduce friction. This preferred form of my core-barrel is used in the following manner:

Preparatory to the application of the clay, 100 loam, or other appropriate coating, I, the adjuster D d is so turned as to cause said barrel to ascend along the core-bar A until the bottom of the annular grooves l of the segments

is about level with the upper margin of the annular rim b' of the lower head, B, as seen in Fig. 1. While the barrel is thus advancing, the inclined projections J are gradually being forced against the beveled periphery of the fixed wheel K, which accordingly acts as an expander that distends the barrel and causes it to assume a true cylindrical form from end to end, said wheel serving also to prevent an accidental collapse of said barrel. (See Fig. 4.) The outer coating, I, is then applied to the barrel and turned down true and smooth in the manner well known to all molders, the clay anchoring both in the holes H and longitudinal slots g , the rearwardly-flaring shape of these devices affording a secure hold for the covering material. The core is then baked or dried in the usual way and lowered into the pit, mold, or flask into which the metal is to be poured, it being understood that the apparatus is designed more especially for casting gas and water pipes, or other similar tubes. While the metal is being poured into the pit or flask the resultant gas or vapor escapes from the coating I through the holes H and slots g into the interior of the barrel, which latter has free ventage at the openings f' . (Seen in Fig. 3.) As soon as the metal has set or become cool, the adjuster D d is turned in a reverse direction for the purpose of causing the barrel to descend along the supporting bar or tube A, which act relieves the projections J from the pressure of the expander K, and simultaneously forces the lower end of said barrel into the chamber b of head B. As this portion of the barrel descends into said chamber, the chamfered bearings L of the various segments G are forced against the inclined rim b' of said head, thereby gradually and uniformly contracting these segments from top to bottom, and causing said barrel to assume the tapering or conical form seen in Fig. 2. While these segments are thus being collapsed, the slots g are necessarily becoming narrower, and as they are brought together their sharp edges cut the clay loose from the barrel and allow the latter to be conveniently lifted out of the pit, flask, or mold.

In the modification of my invention seen in Fig. 5 the lower head, B', has a series of upwardly-projecting expanders, B'', one for each segment composing the barrel, the outer edges of said expanders being inclined at any suitable angle.

J' and K' are inverted fac-similes of the de-

vices J K. (Seen in Fig. 2.) In this construction the barrel G is normally contracted or collapsed; but when said barrel is forced down along the core-bar A the inclined expanders B'' coact with the devices J' K' in gradually pressing the segments outwardly, and thus bringing said barrel to the desired cylindrical form, as indicated by the dotted lines. The cylindrical barrel is then properly coated, the casting made, and said barrel is then caused to ascend the core-bar A and assume its normal or contracted condition, which act frees said barrel from the clay or other covering. From this description it is apparent that the devices seen in Figs. 2 and 5 embody the same features—that is to say, a supporting core bar or tube surrounded by a longitudinally-slotted barrel or shell that is expanded and contracted by shifting it along said bar. Either of these devices will be found to possess decided advantages over those collapsible core-barrels operated by shiftable core-bars, as some casting pits and flasks are so made as to render it impossible to use these shiftable bars without removing the socket-plate at the bottom of the pit every time a pipe is cast, thereby involving a loss of time and causing a corresponding increase in the cost of manufacture. Finally, either of these core-barrels may be shifted by any convenient appliance or appliances, as the invention is not limited to the screw-threaded adjuster herein shown and described.

I claim as my invention—

1. A core bar or tube carrying a longitudinally-slotted barrel, means for advancing and retracting the barrel along said bar, and devices for expanding and contracting said barrel, substantially as described.
2. The combination, in a collapsible-core apparatus, of the supporting bar or tube A, head B b' , fixed collars C E, screw-threaded adjuster D, screw-threaded head F f , longitudinally-slotted core-barrel G g , inwardly-inclined projections J, expander K, and chamfered bearings L, for the purpose described.
3. A collapsible core-barrel whose segments G are separated by inwardly-flaring longitudinal slots g , for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

DANIEL G. COPPIN.

Witnesses:

JAMES H. LAYMAN,
SAML. S. CARPENTER.