

No. 814,519.

PATENTED MAR. 6, 1906.

C. N. CHURCH.

APPARATUS FOR FORMING BEADS ON CAST IRON PIPE.

APPLICATION FILED DEC. 1, 1904.

Fig. 2.

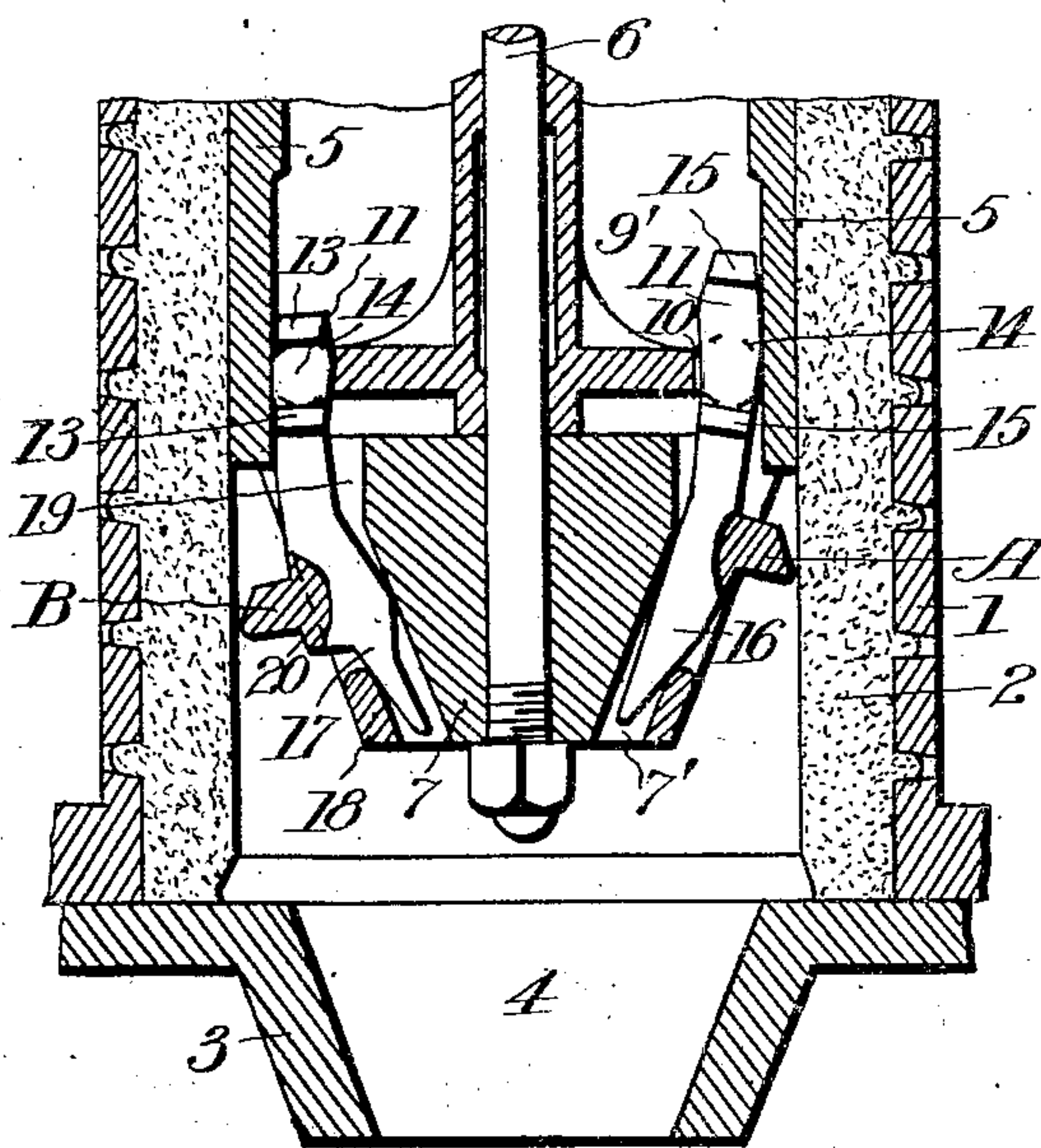


Fig. 3.

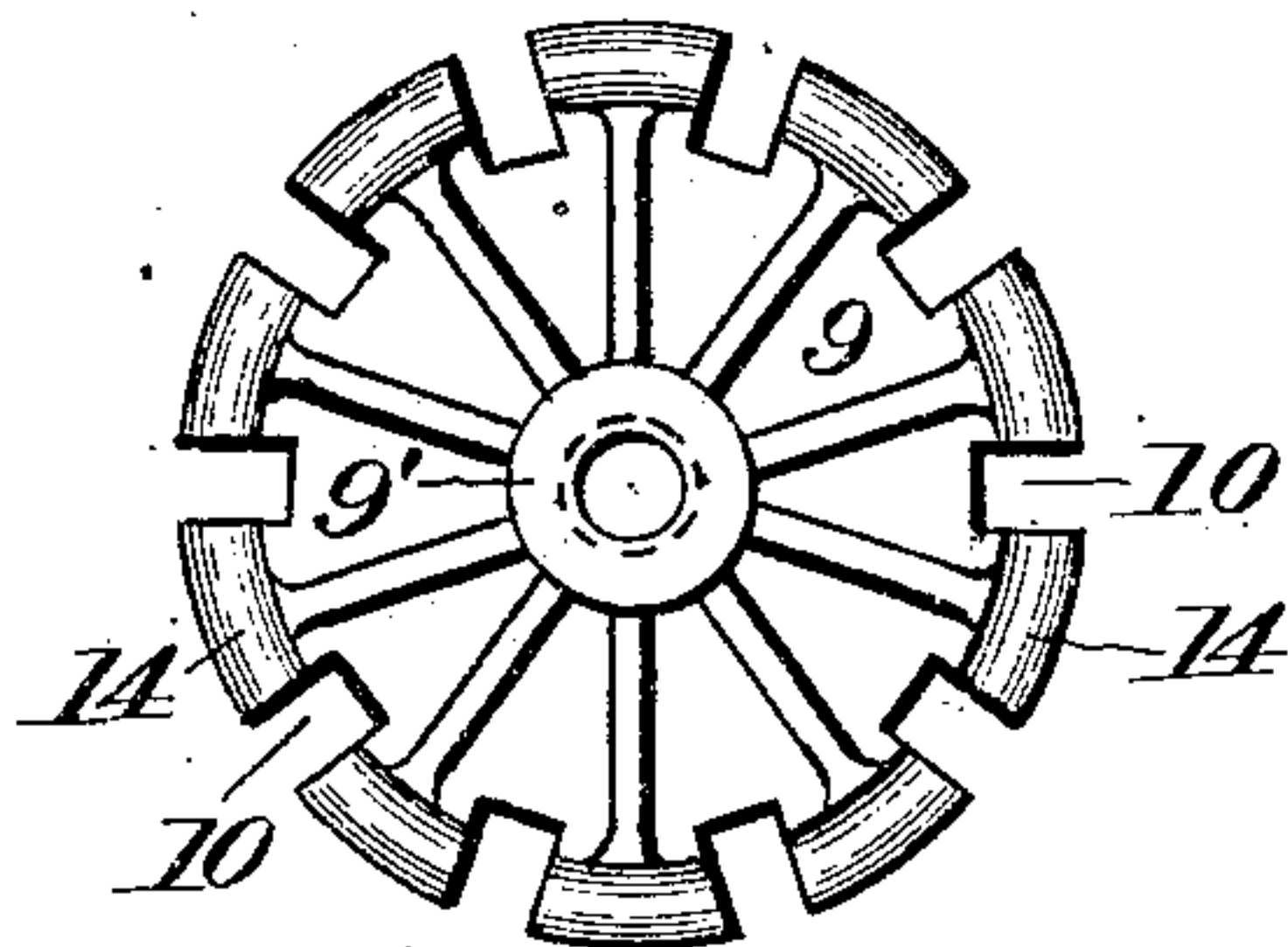


Fig. 4.

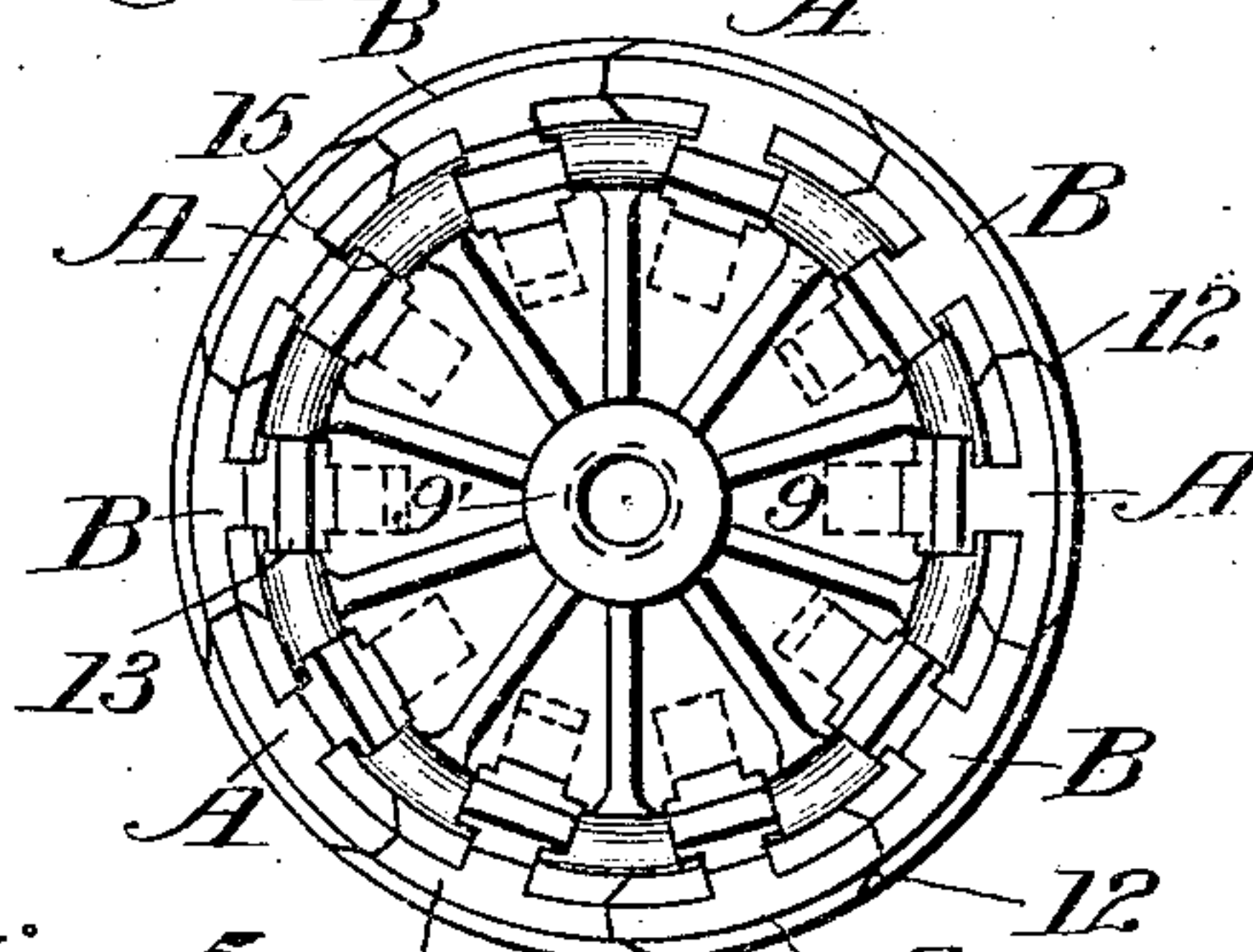


Fig. 5.

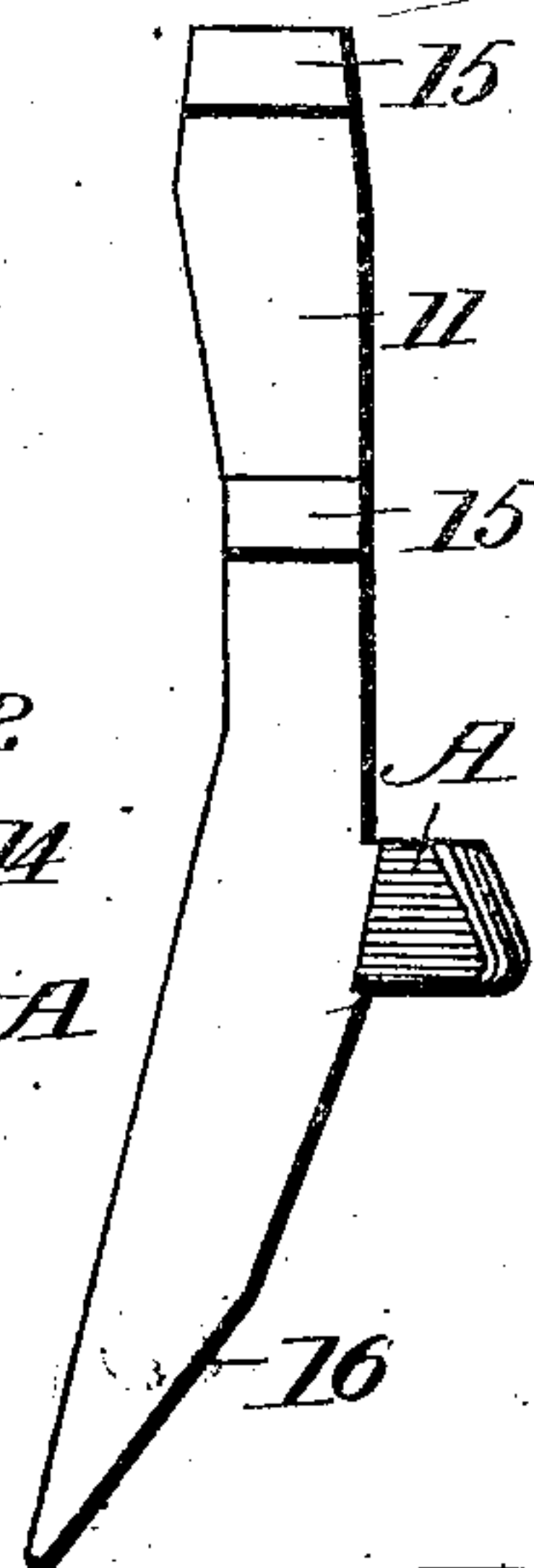


Fig. 6.

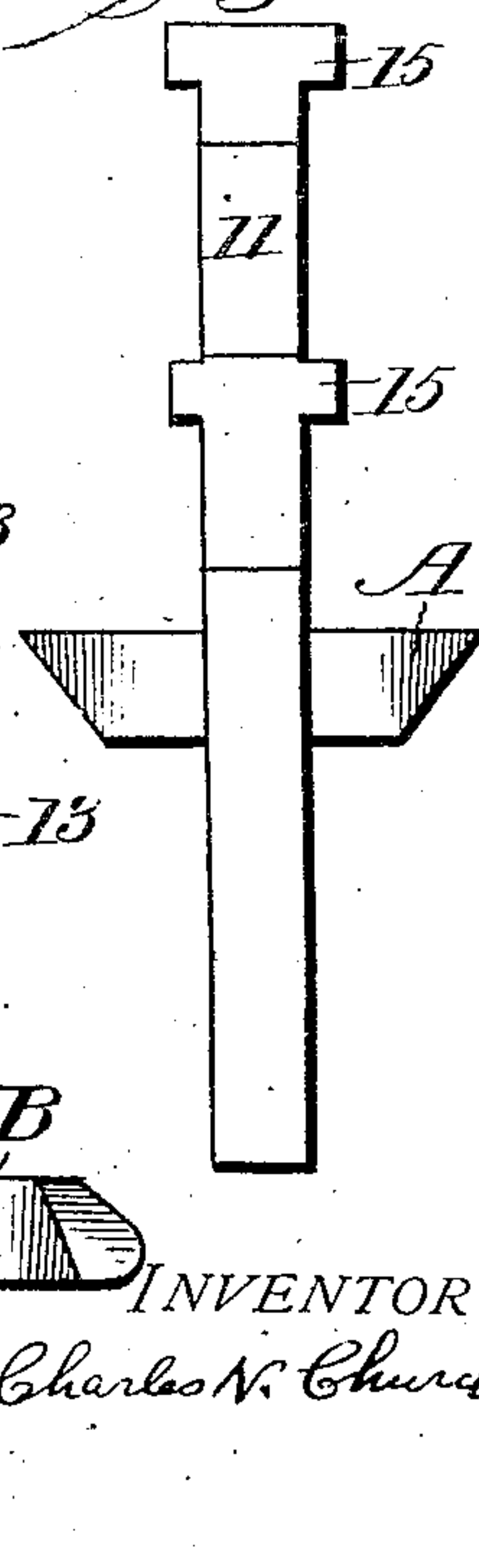
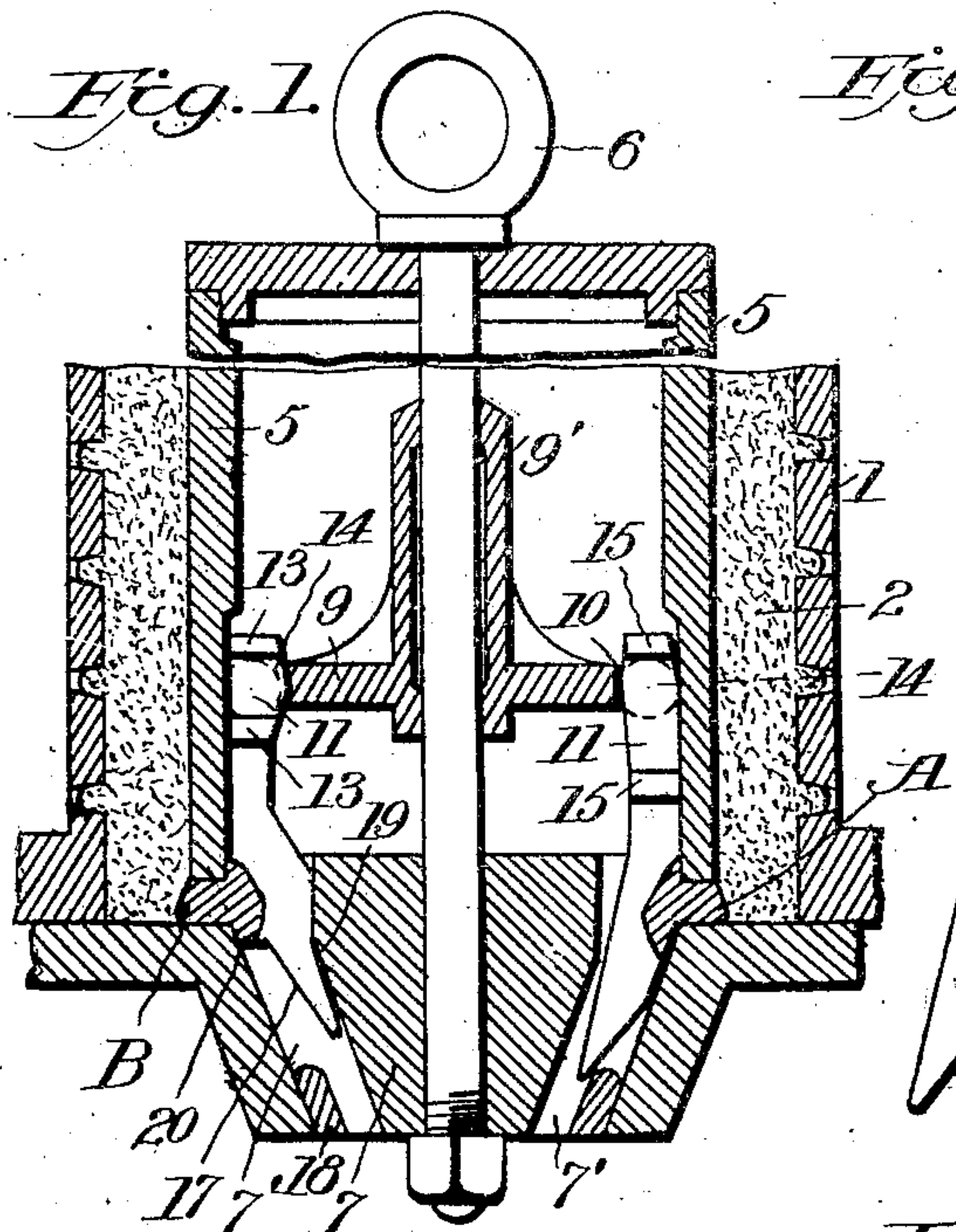


Fig. 1.



WITNESSES:

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Fig. 7.

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APPARATUS FOR FORMING BEADS ON CAST-IRON PIPE.

No. 814,519.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed December 1, 1904. Serial No. 235,119.

To all whom it may concern:

Be it known that I, CHARLES N. CHURCH, a citizen of the United States, residing at Burlington, in the county of Burlington and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Forming Beads on Cast-Iron Pipe, of which the following is a specification.

This invention relates to apparatus for forming beads upon cast pipe; and the object is to provide an improved bead-ring pattern which may be readily withdrawn from the mold after the bead is formed in the sand without removing the flask and mold from the chill, thus obviating the causing of an uneven pipe at the bead end and the escape of metal between the flask and chill, the improved device being simple in construction and automatic in its action.

With the above object in view the invention consists in the novel features of construction hereinafter fully described, particularly pointed out in the claims, and clearly illustrated by the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view through the flask, pattern, and bead-ring, showing my invention in use; Fig. 2, a similar view showing the position of the parts after the bead is formed and the bead-ring pattern and main pattern partially withdrawn; Fig. 3, a top plan of the disk to which the bead-ring sections are attached; Fig. 4, a similar view with the bead-ring sections attached to the disk. Fig. 5 is a view illustrating one of the bead-ring sections of one set in side elevation; Fig. 6, a similar view illustrating the same in rear elevation, and Fig. 7 a rear elevation of one of the bead-ring sections of the other set.

Referring now more particularly to the drawings, 1 designates the flask; 2, the mold; 3, the chill plate at the lower end of the mold, having a central downwardly-tapering opening 4 formed therein, and 5 the main pattern.

6 designates an eyebolt passing centrally through the plate at the top of the pattern and through a conical plug 7 at the lower end of the pattern, thus holding the plate, main pattern, and plug rigidly together. The plug 7 fits into the taper opening 4 of the chill and centers the pattern. Said plug is also provided about the periphery with slots 7' to receive the stems of the sections of the bead-ring, fully described hereinafter.

Loose on rod 6 is a disk 9, provided with a sleeve 9' to hold it at right angles to the rod,

and extending inwardly therefrom a number of radial slots 10 receive the upper portions 11 of the stems of the bead-sections A and B. These bead-sections are wedge-shaped, a certain number, A, with the larger end of the wedge uppermost and an equal number, B, with the smaller end of the wedge uppermost, said sections being arranged alternating, so that a perfect rigid bead-ring is formed when the pattern is in place. The meeting edges 12 of the bead-sections A and B are oppositely beveled, so as to interlock when the sections are in place to form a smooth continuous ring, sections B being outermost. The upper portions or hangers of the bead-sections B are formed with lugs 13, projecting above and below the disk, so as to prevent independent longitudinal movement of the sections with respect to the disk, but to permit a rocking movement of said bead-sections, the adjacent portions 14 of the disk upon which the lugs bear being rounded, as illustrated in Figs. 1 and 2. The other set, A, of bead-sections have lugs 15, which are spaced from each other and disposed upon the upper and lower sides of the disk, whereby there may be an independent vertical movement of these sections relative to the disk. These sections are also arranged to rock or swing to or from the center of the main pattern, the adjacent portions of the disk being rounded to permit such movement. The bead-sections project between the lower end of the main pattern and the plug beyond the wall of the former and rest upon the chill when in position to form the bead in the mold. Both sets of bead-sections have stem portions extending downwardly into the openings 7' of the plug and formed with cam portions, the cam 16 of the sections A being formed at a different angle or plane from the cams 17 of the sections B. Plug 7 is formed at its lower end with a web or operating portion 18, which by engagement with the cam-surfaces of the stems is adapted to effect the rocking movement thereof on the disk and the inward movement of the bead-sections in the manner to be fully described.

The operation of my machine is as follows: After the bead is formed in the sand and the mold is ready for the withdrawal of the pattern the eyebolt 6 is drawn outward, carrying with it the plug 7, the main pattern, and the plate at the upper end thereof. As said plug moves outward the web or operating portion 18 engages first the cam portions 16

of the sections A, swinging or rocking said sections on the disk in which they are hung and drawing the sections toward the center of the pattern. A further movement of the pattern causes said web to engage the cam portions 17 of the sections B, effecting the swinging thereof inward toward the center of the pattern within the wall of the mold. During the continued upward movement of the plug the sections A and the pattern move upward, the spaced lugs of said sections permitting this movement of the sections relative to the disk. While sections A are being withdrawn from the sand inward movement of the sections B is prevented by the straight wall 19 of the plug; but when the withdrawal of the sections A has been effected the straight wall has moved far enough to permit the inward movement of the sections B. The sections A and B having been withdrawn inwardly sufficiently to prevent the scraping or scratching of the wall of the main part of the mold, as per Fig. 2, a further movement effects the removal of the pattern, &c., from the flask without injury to the mold. As the pattern is lowered into the flask it is centered by the plug, and the bead-sections are automatically returned to their place by engaging the upper face of the chill.

I have provided the sections A or B, or both, with an enlargement 20 of the stem below the bead-sections, forming a ring of projections which by either entering the chill-opening centers the plug and other parts, or should the pattern be lowered to one side far enough for one or more of these projections to rest upon the chill the outside edge of the bead-sections will be held sufficiently high above the chill-face through the medium of the stems 7, lugs 13 and 15, and the disk to prevent jamming of said edge of the bead-sections in tapered opening of the chill.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a device for molding beads of cast pipe, the combination with the main pipe-pattern, of a bead-ring comprising a plurality of bead-sections arranged to swing therein and formed with cam portions and operating means for cooperating with said cam portions to swing said sections inwardly from the bead-mold after the latter has been formed.

2. In a device for molding beads on cast pipe, the combination with the main pipe-pattern, of a bead-ring comprising sets of alternating bead-sections, arranged to swing into and out of the pipe-pattern and formed with cam portions, and means cooperating with said cam portions to swing said sections

inwardly from the bead-mold after the latter has been formed, said cam portions and operating means being so constructed and arranged as to effect the swinging of said sections in sets.

3. In a device for molding beads on cast pipe, the combination with the main pipe-pattern, of a bead-ring comprising two sets of bead-sections having cam portions, a plug having operating means for engaging said cam portions and effecting the withdrawal of the bead-sections in sets from the bead-mold after the latter has been formed, and means for effecting the movement of the plug.

4. In a device for molding beads on cast pipe, the combination with the main pipe-pattern, of a disk in said pattern, a bead-ring comprising a plurality of bead-sections, mounted to swing in said disk, and formed with cam portions, a plug below said disk having operating portions adapted to engage the cam portions and effect the inward movement of the bead-sections, from the bead-mold, and means for effecting the movement of the plug.

5. In a device for molding beads on cast pipe, the combination with the main pipe-pattern, of a disk in said pattern, a bead-ring comprising a plurality of bead-sections having stems mounted to rock in the disk and downwardly-extending cam portions, a plug below the disk having slots to receive said cam portions and an operating portion to engage the cam portions and effect the rocking of said bead-sections to withdraw them from the bead-mold after the latter has been formed, and means for effecting the movement of said plug.

6. In a device for molding beads on cast pipe, a flask, a chill-plate having a central opening, a main pipe-pattern, a plug carried thereby fitting in said opening of the chill-plate, a bead-ring comprising a plurality of bead-sections, an enlargement on said sections forming a ring on the under side thereof for the purpose set forth, and means for collapsing said bead-ring.

7. In a device for molding beads of cast pipe, the combination with the main pipe-pattern of a bead-ring comprising two sets of bead-sections arranged alternately, and means adapted to successively engage the sets of bead-sections and withdraw the same from the bead-mold in sets when the mold has been formed.

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

CHARLES N. CHURCH.

Witnesses:

L. O. LANGE, Jr.
C. A. MCINTYRE.