No. 648,010. Patented Apr. 24, 1900.

E. C. WILEY.

DEVICE FOR FORMING BEADS IN MOLDS.

(Application filed July 28, 1899.)

(No Model.)

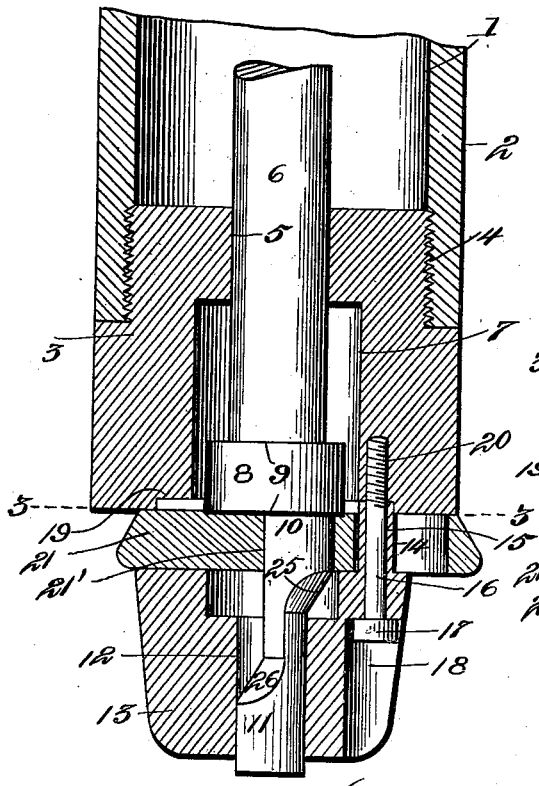

Fig. 1.

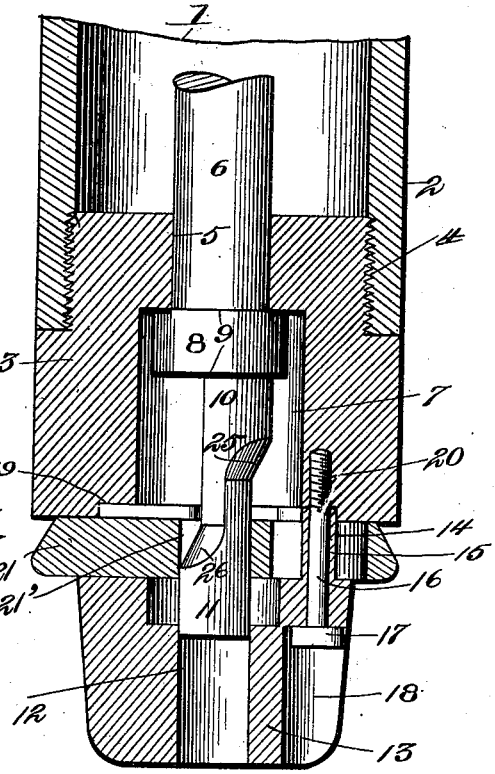

Fig. 2.

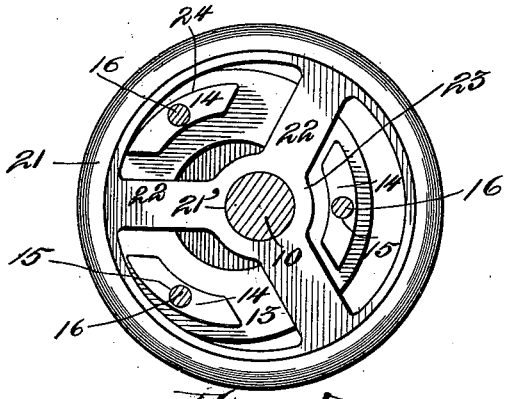

Fig. 3.

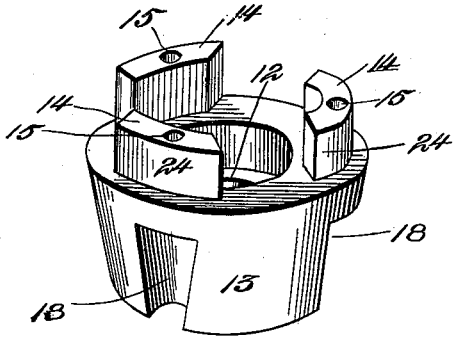

Fig. 4.

Witnesses
Clarence H. Walker.
D. F. Hallauer Jr.

Edgar C. Wiley Inventor
By E. G. Siggers
Attorney

UNITED STATES PATENT OFFICE.

EDGAR C. WILEY, OF LYNCHBURG, VIRGINIA, ASSIGNOR OF ONE-HALF TO H. E. McWANE, OF SAME PLACE.

DEVICE FOR FORMING BEADS IN MOLDS.

SPECIFICATION forming part of Letters Patent No. 648,010, dated April 24, 1900.

Application filed July 28, 1899. Serial No. 725,418. (No model.)

To all whom it may concern:

Be it known that I, EDGAR C. WILEY, a citizen of the United States, residing at Lynchburg, in the county of Campbell and State of Virginia, have invented a new and useful Device for Forming Beads in Molds, of which the following is a specification.

This invention relates to devices for forming beads in molds; and the object of the invention is to provide, in connection with a pattern, means for forming in the wall of a mold a cavity in which the bead on the finished article is molded. In casting pipe various appliances have heretofore been used for forming the bead-cavity in the mold; but owing to the construction of such devices great difficulty and annoyance have been experienced by reason of the fact that the part or parts employed to form the bead-cavity in the mold would not operate satisfactorily upon the sand, but would act to loosen the sand and partially fill up the cavity. In other instances it has been found difficult to withdraw the pattern from the sand without injuring the mold.

It is the object of the present invention to overcome the difficulties above referred to and to provide simple and effective means for forming the bead-cavity in the mold and afterward centering the beading device, so as to enable the pattern and beading device to be withdrawn from the sand without injuring the mold.

The detailed objects and advantages of the invention will be fully pointed out in the course of the subjoined description.

The invention consists in a device for forming beads in molds embodying certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and incorporated in the claims.

In the accompanying drawings, Figure 1 is a central longitudinal section through a portion of a pipe-pattern, showing the bead-forming device and the operating mechanism therefor constructed in accordance with the present invention. Fig. 2 is a similar view showing the operating-spindle used as a centering device for the beading-ring. Fig. 3 is a cross-section on the line 3 3 of Fig. 1. Fig. 4 is a detail perspective view of the block which supports the beading-ring and operating-spindle.

Similar numerals of reference designate corresponding parts in all the figures of the drawings.

In the accompanying drawings, 1 designates a pipe-pattern embodying, essentially, a cylindrical outer surface 2, conforming to the diameter of the pipe to be cast. The body portion of the pattern is shown for convenience as tubular, and in carrying out the present invention a plug 3 is screwed into the end of the body 1, as shown at 4, and is provided at its inner end with a journal or bearing opening 5, in which is journaled an operating-spindle 6, which extends longitudinally within the body 1 to any convenient point where it may be rotated for imparting motion to the beading-ring hereinafter described.

A longitudinal recess 7 is formed in the outer portion of the plug 3, extending from the outer end thereof inward a suitable distance, and the spindle 6 is provided with a fixed collar or annular enlargement 8, which is movable lengthwise of the recess 7 and which comprises opposite shoulders 9, which operate to limit the sliding or longitudinal movement of the spindle, said spindle being capable of being moved longitudinally as well as rotated. Beyond the collar 8 the spindle is provided with an eccentric portion 10 and with a terminal concentric portion 11, and this terminal concentric portion 11 is received and journaled in an opening 12, located centrally of a ring supporting and guiding block 13, which is mounted at the end of the pattern and adjacent to the end of the plug 3, the spindle 6 being thus journaled and supported at the spaced points 5 and 12.

By reference to Fig. 4 it will be seen that the block 13 is frusto-conical in shape and is provided at its inner end with a series of spacing-lugs 14, through which extend openings 15 for the reception of securing devices 16, shown for convenience in the form of screws, the heads 17 of which are received in countersunk recesses 18 in the block 13. The ends of the spacing-lugs 14 are received in an annular groove or rabbet 19 in the outer end of the plug 3, and the securing-screws 16 pass

through the body portion of the block 13, thence through the spacing-lugs 14, and engage in threaded sockets 20 in the plug 3, thereby securing the block firmly to the pattern.

The space between the body of the block 13 and the end of the plug 3 is just sufficient to receive the beading-ring (shown at 21) and to admit of the free movement of said ring when actuated by the spindle 6. The outer surface of said beading-ring 21 is given a shape which corresponds with the shape of the beads to be formed on the pipe. The beading-ring also comprises, essentially, an opening 22′, in which the concentric and eccentric portions of the spindle are received at different times. For convenience the peripheral portion of the beading-ring 21 is connected by means of a series of spokes or arms 22 to the inner or hub portion 23, in which the opening 21′ is formed, and said arms or spokes 22 extend radially outward and play between the spacing-lugs 14 hereinabove described, sufficient space being left between the adjacent ends of the spacing-lugs to admit of a movement of the spokes in the plane of the ring and a corresponding partial rotation of the bead-ring itself, which will enable the working surface or periphery of the ring to operate in rolling contact with the wall of the mold for pressing outward the sand and forming the bead-cavity. The outer sides 24 of the spacing-lugs form bearing-surfaces against which the rim of the beading-ring operates.

From the foregoing description it will be understood that by revolving the spindle 6 an eccentric motion is imparted to the beading-ring by reason of the coöperation between the eccentric portion of the spindle and said ring. In this manner the bead-cavity is formed in the wall of the mold, and by reason of said ring operating in rolling contact with the wall of the mold the sand is pressed evenly outward in an approximately-radial direction, and the dragging of the sand from such cavity is effectually overcome. When the bead-cavity has been formed, the spindle 6 is moved longitudinally from the position shown in Fig. 1 to the position shown in Fig. 2, whereupon the concentric terminal portion 11 of the spindle enters the opening 21 of the beading-ring and acts as a centering device for bringing said ring into concentric relation to the pattern. In this position the periphery of the beading-ring will present no projection beyond the outer surface of the pattern, and the latter may be readily withdrawn from the sand without injuring the mold. In order to insure a smooth engagement between the eccentric and concentric portions of the spindle and the opening 21 of the beading-ring, the spindle is provided adjacent to such eccentric and concentric portions with tapering or beveled surfaces 25 and 26, which lead outward to the peripheral surfaces of said portions and which coöperate with the wall of the opening 21′ to shift the beading-ring and enable said concentric and eccentric portions of the spindle to be engaged therewith.

I desire to call attention to the fact that the spindle 6 of my improved device is capable of two successive periods of operation by reason of the fact that it is formed with eccentric and concentric portions and also because it is mounted for rotation on its axis and for an endwise-shiftable adjustment. This spindle constitutes the driving element or member of my improved bead-forming device, and it constitutes a simple and efficient means whereby the beading-ring may be adjusted into concentric and eccentric relations to the pattern and also for giving to the beading-ring a gyratory motion or a motion in a path eccentric to the axis of the driving member or element 6 and the pattern with which the beading-ring coacts. This beading-ring constitutes the driven element of my improved bead-forming device, and this bead-forming element has its outer edge fashioned to produce a pattern-surface adapted to act on the sand in order to provide the desired offset therein for the reception of the fluid metal to form the shoulder on the pipe or other casting.

The driving element or member in the form of the spindle acts on the bead-forming member or ring during its endwise or shiftable adjustment to position said bead-forming element in concentric or eccentric relation to the driving member 6 and the pattern, according to the direction in which said element or member 6 is shifted. Thus when the member 6 is moved in a downward direction the eccentric 10 thereof acts on the bead-forming member to move the latter into eccentric relation to said driving member and the pattern; but a reverse adjustment of the shiftable member 6 brings its concentric portion 11 thereof into engagement with the bead-forming member to position the latter concentric with the driving member and the pattern. The bead-forming member when engaged with the eccentric portion 10 of the driving member 6 is capable of being actuated thereby irrespective of the direction in which the member 6 is itself rotated, and thus the members 6 and 21 are adapted to be operated successively and conjointly irrespective of the direction in which the driving member 6 is rotated.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described device for forming beads in molds will be apparent to those skilled in the art without further description, and it will be understood that changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. The combination with a pattern, of a driving member extending therethrough, and a

single beading-ring having a continuous annular pattern-surface of substantially the same diameter as the pattern, said beading-ring being connected to and shiftably related to the pattern and connected with the driving member to be moved in a gyratory path thereby, as set forth.

2. A device for forming beads in molds, comprising a pattern, a driving member extending therethrough, and a gyratory bead-forming member having a continuous pattern-surface of substantially the same diameter as the pattern and shiftably related to the pattern, said bead-forming member being connected to the driving member which is revoluble continuously in either direction, as and for the purpose described.

3. A device for forming beads in molds, comprising a pattern, an annular bead-forming member having a pattern-surface, and a driving and adjusting member having means for actuating the bead-forming member and for shifting the same into eccentric or concentric relation to the pattern, substantially as described.

4. A device for forming beads in molds, comprising a revoluble member having an eccentric, a bead-forming member fitted directly to said revoluble member, and means for shifting the bead-forming member into and out of operative relation to the eccentric, substantially as and for the purposes described.

5. A device for forming beads in molds comprising an operating-spindle having an eccentric portion and a ring-centering portion, and a beading-ring adapted to be engaged by either the said concentric or eccentric portion of the spindle.

6. A device for forming beads in molds comprising a beading-ring, and a longitudinally-movable and revoluble spindle having eccentric and concentric portions adapted to coöperate with said ring.

7. A device for forming beads in molds comprising a beading-ring, a longitudinally-movable and revoluble spindle having eccentric and concentric portions adapted to coöperate with said ring, and a limiting-shoulder on said spindle.

8. A device for forming beads in molds comprising a pattern, a block secured thereto and provided with spacing-lugs between the pattern and block, a beading-ring interposed between the pattern and block, and means for imparting motion to said ring.

9. A device for forming beads in molds comprising a pattern, a block secured to the pattern and provided with spacing-lugs between the pattern and block, a beading-ring provided with spokes or arms operating between said spacing-lugs, and means for imparting motion to said ring.

10. A device for forming beads in molds comprising a hollow pattern, a plug fitted to the end thereof and provided with a recess, a block secured to the plug so as to leave a space between it and the plug, a beading-ring interposed between the block and plug, and an operating-spindle for the ring having a collar which moves in the recess in the plug, substantially as and for the purpose specified.

11. A device for forming beads in molds, comprising a bead-ring, and a longitudinally-shiftable and revoluble element capable of two successive periods of movement for positioning the beading-ring in concentric and eccentric relation thereto, said ring being actuated by said element, as and for the purpose described.

12. A device for forming beads in molds, comprising an annular bead-forming member having a pattern-surface, and a longitudinally-shiftable and revoluble spindle engaging operatively with said member, whereby the member may be driven in a gyratory path by the spindle and be shifted in concentric relation therewith, as and for the purposes described.

13. A device for forming beads in molds, comprising an annular bead-forming member having a pattern-surface, a pattern, means for shifting the bead-forming member in eccentric and concentric relation to the pattern, and means for moving the bead-forming member in a gyratory path, as and for the purpose described.

14. A device for forming beads in molds comprising a pattern, a gyratory bead-forming member having an annular pattern-surface of a diameter equal substantially to that of the pattern, and an actuating device connected to said bead-forming member for turning the latter and for bodily shifting the same into concentric and eccentric relation to the pattern, as set forth.

15. A device for forming beads in molds, comprising a pattern, an annular bead-forming member having a pattern-surface, and a revoluble and longitudinally-shiftable member engaging normally with said bead-forming member, for the purpose described, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDGAR C. WILEY.

Witnesses:
W. H. GALWAY,
L. C. GARDNER.