2 Sheets—Sheet 1.

J. PENNYCOOK.

COLLAPSABLE CORE FOR CASTING METAL PIPE.

No. 189,492. Patented April 10, 1877.

Fig. 1.

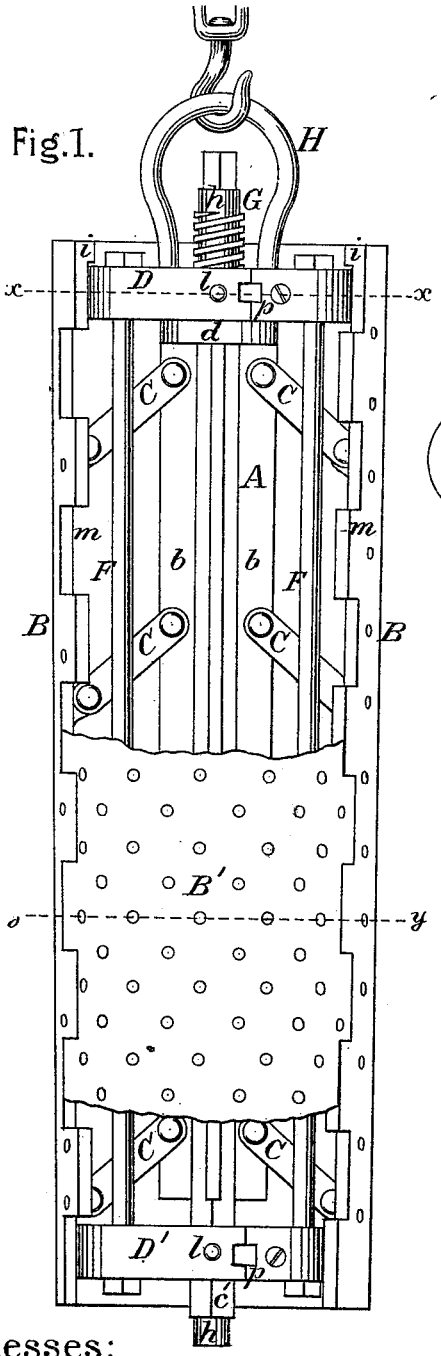


Fig. 5.

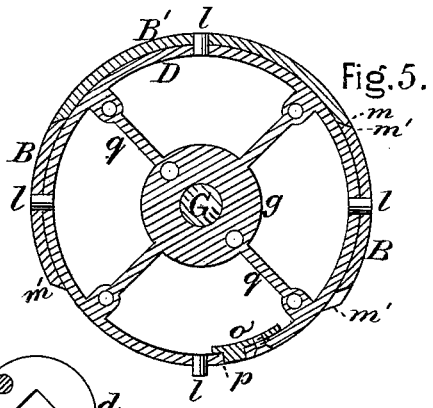


Fig. 6.

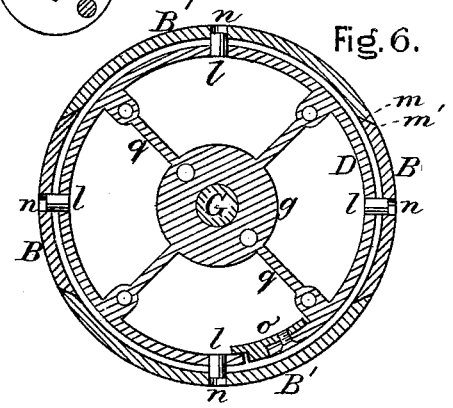
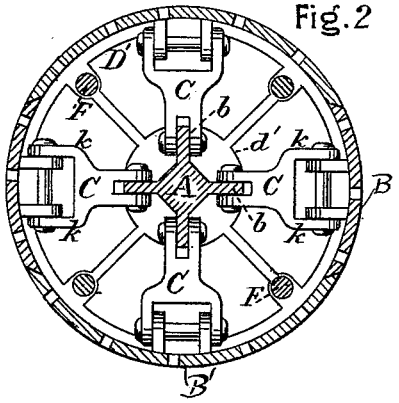


Fig. 2



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2 Sheets—Sheet 2.

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COLLAPSABLE CORE FOR CASTING METAL PIPE.

No. 189,492. Patented April 10, 1877.

Fig.3.

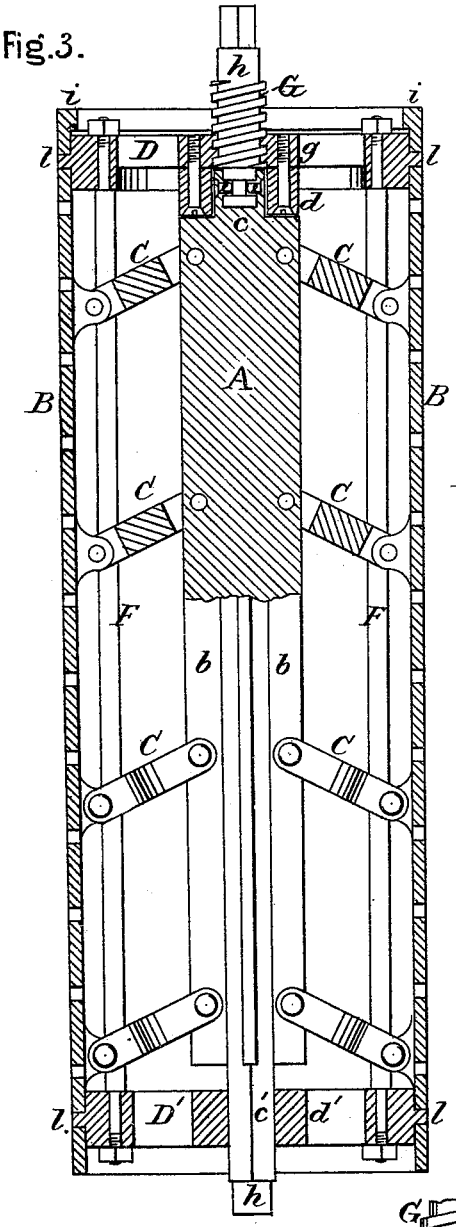


Fig.4.

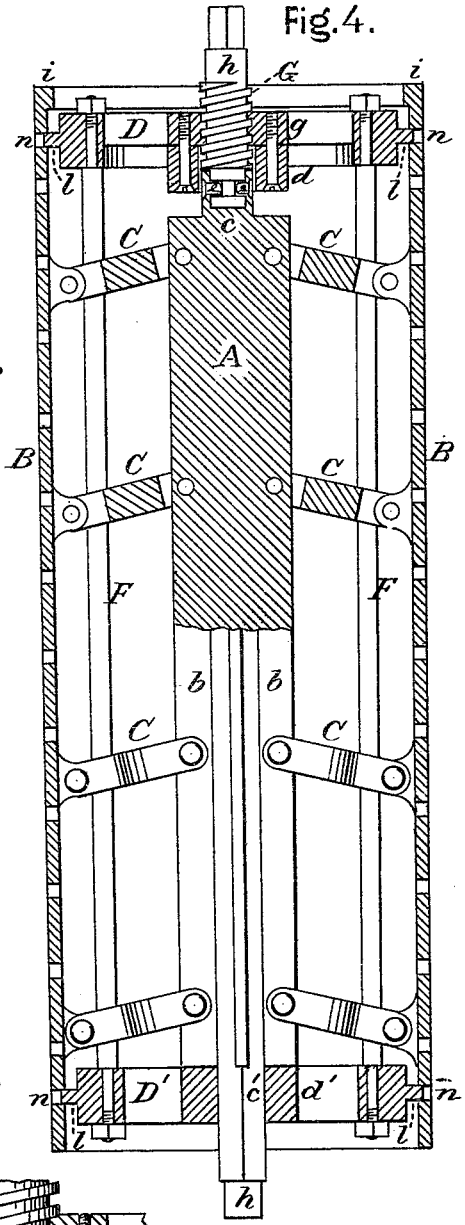
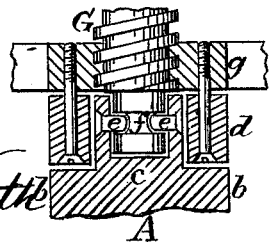


Fig.7.



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UNITED STATES PATENT OFFICE.

JOHN PENNYCOOK, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN COLLAPSIBLE CORES FOR CASTING METAL PIPES.

Specification forming part of Letters Patent No. **189,492**, dated April 10, 1877; application filed August 10, 1876.

To all whom it may concern:

Be it known that I, JOHN PENNYCOOK, of the city of Chicago, county of Cook, State of Illinois, United States of America, have invented certain Improvements in Molders' Core-Bar for Casting Metallic Pipe, of which the following is a specification, reference being had to the accompanying drawings.

My invention consists in a peculiar collapsible core to be used in casting metallic pipes or cylinders.

In the drawings, Figure 1 is a semi-sectional elevation of the core-bar, showing interior arrangements; Fig. 2, a cross-section through the body on line *y y;* Fig. 3, longitudinal section of Fig. 1; Fig. 4, a section of same description, when expanded; Figs. 5 and 6, horizontal sections through head, indicated by line *x x*, relating to above-mentioned Figs. 3 and 4; Fig. 7, a detached view of working parts in detail, the proportions enlarged.

The body of the core-bar is of cylindrical form, tapering in line from head downward, consisting of four separate longitudinal section-plates, with crenelled and beveled edges, jointing each other, and held in position by hinged links to the radial flanges of a likewise tapering center guide-bar, suitably attached to a head and foot collar-ring, and provided with radial projecting steady guide-pins, sliding in corresponding holes at the section-plates. The top of said guide-bar carries the working-screw, arranged and fastened to the head collar-nut, so, when turned, moves the center bar in vertical direction, sliding thereby in guide-nut at top and bottom, up or down, the levers expanding or contracting the core-bar at pleasure.

Referring to the drawings of my invention, the following is an explanation thereof: A is a tapered guide-bar, with projecting flanges *b b*, to which links are attached, connecting with the section-plates. The extensions *c c'* of both ends from the body, passing through guide-nuts *d d'*, keep the guide-bar in line, and prevent twisting. In the upper part of the guide-bar is inserted the prolongation of a working-screw, kept in position by pins *e e*, in suitable grooves at neck *f*, as shown in Fig. 7, while the convolutions of the screw are playing in the nut of head-collar ring, the extreme end on top of screw and bottom of guide-bar projecting out as journals *h h* for the purpose of turning the core-bar around its axis. B B are four perforated smaller and larger segmental section-plates of equal thickness, forming a cylindrical casing around the guide-bar A, the edges crenelled and beveled, keeping them uniformly closed when expanded or contracted, the smaller sections B B acting thereby as guides, sliding on the beveled edges *m m'* in radiate direction in or out. The perforations are for the purpose of retaining a coating of loam spread over the whole surface. The upper parts *i i* of the section-plates are strengthened to resist knocking and hammering when removing the dry and hard adhesive particles. C C are fork-shaped links, endwise hinged to the flanges of guide-bar A, and the yokes *k k* to the section-plates B B', keeping them in proper parallel distance from the tapering guide-bar. D D' are top and bottom collar-rings, kept in firm position by stay-rods F F, and provided each with four diametrical (and from periphery) projecting steady-pins, *l l*, sliding into corresponding holes *n n* in section-plates B B', supporting the same in position. To regulate the effect of heat, and prevent the collar-rings from splitting, they are intersected at *p*, one part carrying underneath an expansion-plate, *o*, while the other slides on it. G is a screw, the convolutions working in collar-nut *g*, which is centrally located and connected to head collar-ring D by arms *q q*. Underneath is applied the guide-nut *d* fastened with bolts or screws. The lower part of the screw is inserted and conveniently secured in the top part *c* of the guide-bar, moving the same in a vertical direction, sliding thereby in the guide-nut *d d'*. H is a shackle, attached to the top collar-arms for hoisting and moving the core-bar.

When required the apparatus may be placed in a horizontal position, turning freely on the journals. The section-plates are extended to their fullest capacity, and a thick coating of loam is spread over the entire surface to prevent the metal adhering to the bar, and likewise to facilitate the escape of gas from the mold. When thoroughly dried a coat of black-wash should be applied, and is then ready to be inserted into the pipe-mold, where molten

metal is poured into the space left between the expanded core and mold. As soon as the metal is sufficiently set the screw is then turned, drawing the center bar with the levers up, and the core-bar collapses, thus preventing the usual strain, causing the splitting of pipe.

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

1. The expansion collar-rings D and D′, held in position by stay-rods F F, in combination with steady-pins *l l*, projecting from the periphery, and sliding in corresponding holes *n n* on section-plates B B′, substantially as and for the purpose specified.

2. The expansion-plates *o o* on expansion collar-rings D D′, underneath the intersections, in manner substantially as and for the purpose specified.

3. The combination of collar-nut *g* with guide-nut *d d′*, in connection with expansion collar-rings D D′, substantially as described.

4. The combination of radial flanges *b* of guide-bar A, screw G, extension *c*, expansion-links C, collar-nut *g*, with means for preventing rotation of bar A, as and for the purpose set forth.

JOHN PENNYCOOK.

Witnesses:
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