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J. H. CALBECK

NOZZLE FOR ATOMIZING MOLTEN METAL

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Fig. 2.

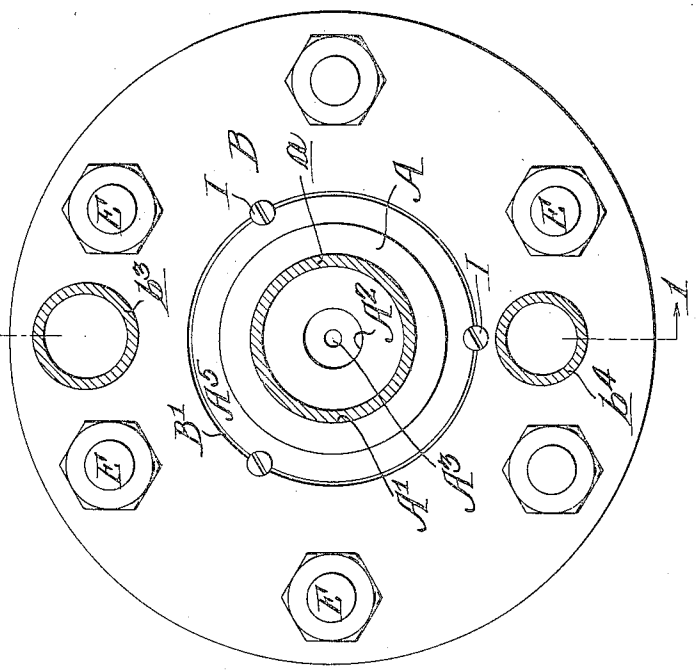
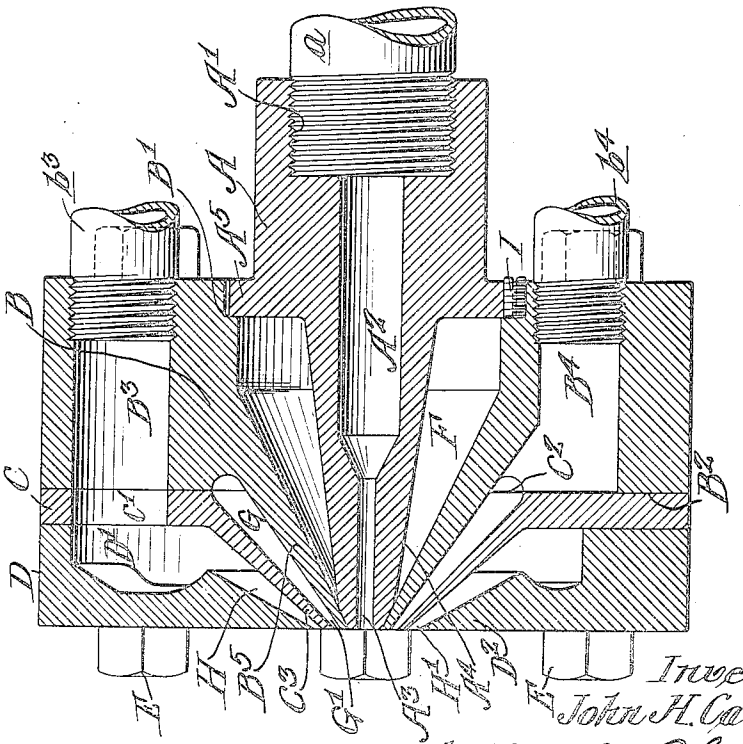


Fig. 1.



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NOZZLE FOR ATOMIZING MOLTEN METAL.

Application filed March 20, 1923. Serial No. 626,253.

To all whom it may concern:

Be it known that I, JOHN H. CALBECK, a citizen of the United States of America, and resident of Joplin, county of Jasper, State of Missouri, have invented a certain new and useful Improvement in Nozzles for Atomizing Molten Metal, of which the following is a true and exact description, reference being had to the accompanying drawing, which forms a part thereof.

My invention relates to the construction of a nozzle for atomizing molten metal and, in its preferred form, for supplying as a part of the issuing jet, fuel gas. The object of my invention is to provide a nozzle in which the tendency of the air and gas passing through the nozzle to chill and freeze the molten metal also passing through the nozzle will be minimized, and, apart from this, a further object is to provide an atomizing nozzle of simple and effective construction, well suited for this purpose.

The nature of my improvements will be best understood as described in connection with the drawings in which they are illustrated and in which—

Figure 1 is a sectional elevation of my improved nozzle, and

Figure 2, a rear view of the nozzle.

A indicates a conduit member of the nozzle through which the melted metal issues. The portion indicated at A^4 forms the inner wall of an air chamber surrounding the metal nozzle and terminating in an annular flange or wall, A^5. B indicates the body portion of the nozzle having a shoulder at B′ which fits on the edge of the flange portion A^5 of the metal nozzle. B^3 and B^4 indicate openings formed in the body piece to which are secured the gas pipe b^3 and the air supply pipe b^4. B^5 indicates a converging wall of the body piece which contacts with the end of the metal nozzle and forms a dead air chamber F surrounding the portion A^4 of the metal nozzle. C is an intermediate member of the nozzle casing formed with an opening C′ which registers with the opening B^3 in the body piece and formed also with a converging wall C^3 surrounding the converging wall B^5 of the body piece and forming with it an air chamber indicated at G, with a nozzle opening G′ in close proximity to the opening A^3 of the metal nozzle. The air chamber G is in free communication with the air passage B^4, as indicated at C^2. D indicates the cover member of the casing forming a chamber D′ which is in free communication with the passages B^3 and C′ and having a contracting outer wall D^2 which forms with the converging wall C^3 a gas chamber H having a nozzle outlet indicated at H′. The casing members are held together by bolts indicated at E and the body pieces secured to the conduit member A, or rather to its flange A^5, by screws as indicated at I.

In operation the melted metal flows through the passages A^2 and A^3. The atomizing jet of air flows from the chamber G to the nozzle opening G′ and the gas supply issues at the same time from the chamber H through the nozzle opening H′. The dead air chamber F protects the conduit member which it surrounds, preventing the heat of the molten metal from being drawn off by the expanded air in the chamber G and avoiding the danger of freezing the metal in the metal nozzle.

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

1. A nozzle for atomizing molten metal comprising in combination a conduit for the molten metal having an opening at its end and a casing enclosing the conduit spaced away from it to form a dead air chamber and having formed in it outside of said dead air chamber a conduit chamber for air under pressure terminating in an air nozzle formed to direct an air jet against the melted metal issuing from the open end of the molten metal conduit.

2. A nozzle for atomizing molten metal comprising a conduit for molten metal having a terminal opening in combination with a casing made up of a body piece secured to the conduit member and forming a dead air chamber around it, said body piece having openings leading into it for air and gas, an intermediate member forming with the body piece an air chamber terminating in an air jet nozzle, said intermediate member having a passage connecting with the gas opening in the body piece, and a cover member forming with the intermediate member a gas chamber terminating in a gas jet nozzle.

JOHN H. CALBECK.