Dec. 31, 1929. G. H. J. EISER 1,742,065

LADLE DISCHARGER

Filed May 26. 1928

Fig. 1.

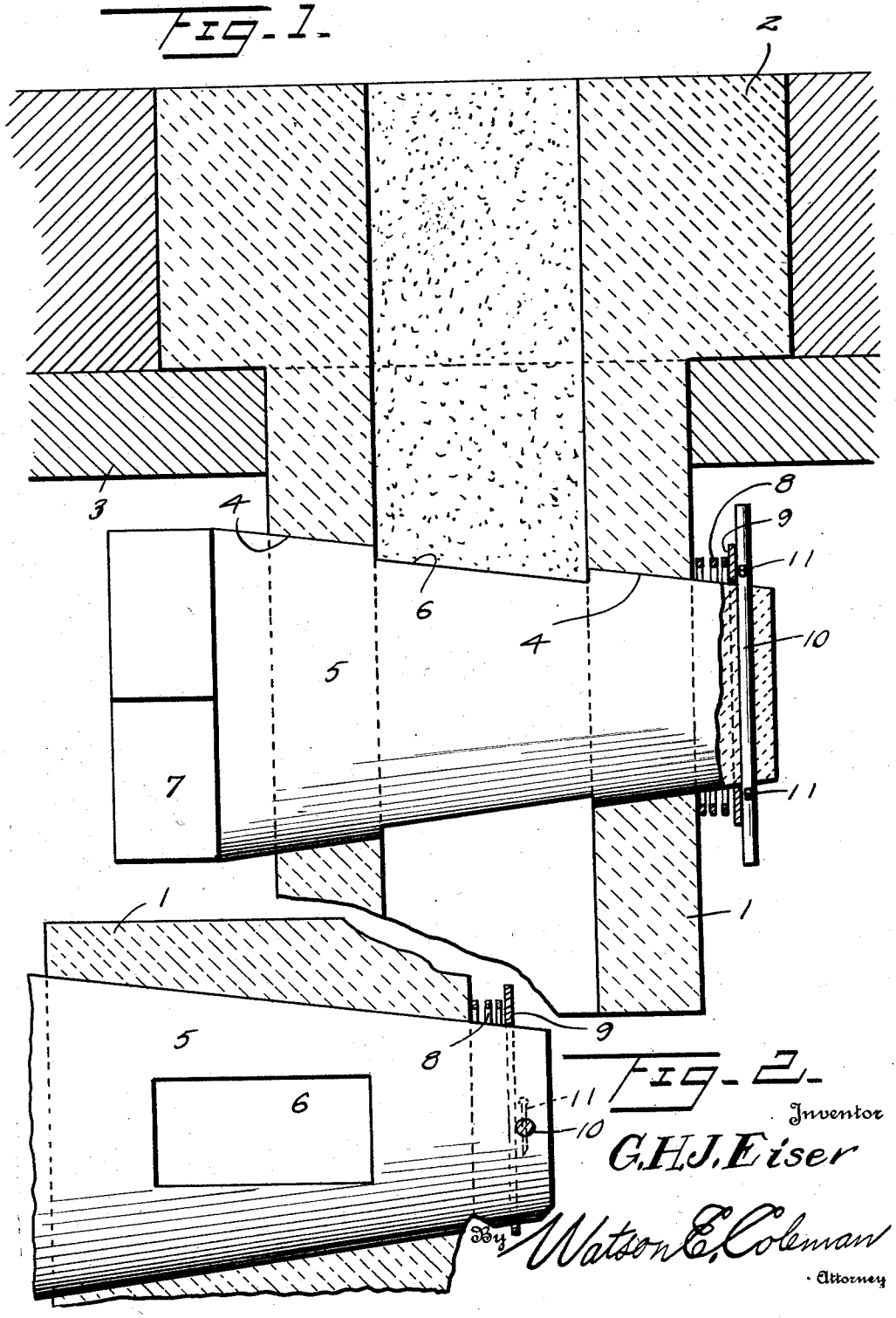


Fig. 2.

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LADLE DISCHARGER

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This invention relates to a ladle discharger and has relation more particularly to a device of this kind especially designed and adapted for use in connection with a ladle for molten metal, and it is an object of the invention to provide a device of this kind which will permit the desired pouring of the molten metal from the ladle with substantially the elimination of danger to the operator.

It is also an object of the invention to provide a discharger of this kind constructed in a manner whereby its life is materially prolonged in comparison with the structures of such devices now generally in use and which is of a type whereby the flow of metal may be readily stopped at any time.

An additional object of the invention is to provide a device of this kind which, when in applied position with respect to a ladle, assures an effective lining of the ladle and wherein the character of the discharger is such to eliminate chilling of the metal.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved ladle discharger whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawing, wherein:—

Figure 1 is a view partly in section and partly in elevation illustrating a ladle discharger constructed in accordance with an embodiment of my invention, the associated portions of the ladle and its lining being shown in fragment;

Figure 2 is a view partly in transverse section and partly in top plan of the discharger as herein embodied.

As disclosed in the accompanying drawing, my improved discharger comprises an elongated nozzle 1, preferably square in cross section, and which has integrally formed with its upper end an outstanding collar 2, preferably square in plan. The nozzle 1 and the collar 2 are produced from fire clay or kindred material and when applied the nozzle 1 is inserted from above through a properly positioned opening in the bottom of the jacket or shell 3 of the ladle with the collar 2 contacting with the portion of the wall of the jacket or shell surrounding the opening. By having the collar 2 square in plan the placement of the lining will be accomplished with convenience.

The nozzle 1 at a desired point intermediate its ends and exteriorly of the ladle when the nozzle is applied has opposed walls provided with the tapered openings 4 which snugly receive the tapered valve 5 formed from high heat resisting material, such as carbon, plumbago, bakelite and fire clay, and which is provided radially therethrough with an opening 6 which, when the valve 5 is in one position, registers with the bore of the nozzle 1 to permit a ready discharge through the nozzle of molten metal. When said valve is given an approximate quarter turn the valve serves to effectively close the flow through the nozzle 1. The discharge of molten metal through the nozzle may be regulated as desired by adjusting the valve as required between full open and full closed positions.

As herein disclosed, the larger end of the valve 5 is provided with a head 7 having an angular periphery with which a wrench or other desired implement is adapted to be engaged to effect the desired manipulation of the valve. The smaller end portion of the valve 5 extends beyond the adjacent face of the nozzle 1 and said extended portion is surrounded by an expansible coil spring 8 interposed between the nozzle 1 and a washer 9 disposed around the extended portion of the nozzle. This washer 9 abuts a bar 10 disposed radially through the valve 5 outwardly of the washer 9 and having its opposite end portions disposed through the valve. The extended portions of the bar 10 have disposed therethrough the pins 11 or the like whereby the bar is effectively maintained in applied or working position. These pins 11 can be readily removed to permit the dis-

placement of the bar 10 when it is desired to remove the valve 5 for replacement or any other cause.

The spring 8 is of a tension to maintain the opposite end portions of the valve 5 in close contact with its seats as afforded by the walls defining the openings 4.

With a discharger constructed in accordance with an embodiment of my invention it has been found in practice that considerable more pouring operations can be had than with the dischargers of the types now generally in use with the further advantage that the flow of molten metal may be stopped at any time with a complete closing of the bore of the nozzle 1 without waste of metal.

Furthermore, the nozzle 1 and its collar 2 are produced from a material which will become thoroughly heated and, therefore eliminate possible chilling of the metal in the nozzle between the ladle end and the valve 5.

At the beginning of the use of a ladle with my improved discharger applied thereto, the bore of the nozzle above the valve 5 is filled with coke dust up to a point substantially flush with the upper surface of the ladle lining so that in the first using of the ladle the molten metal will not enter the upper portion of the nozzle 1 with a resultant liability of becoming chilled. When desired to make the first pouring, upon adjusting the valve 5 into open position the dust will readily pass out. As the use of the ladle continues it will not be necessary to again fill the nozzle with dust as the nozzle will retain sufficient heat to prevent chilling.

If in the initial operation the dust within the nozzle 1 does not readily discharge the requisite discharge may be readily effected by prodding such dust through the lower or discharge end of the nozzle by a suitable implement.

From the foregoing description it is thought to be obvious that a ladle discharger constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:—

A ladle discharger comprising a nozzle insertible through the bottom of a ladle from above, the upper portion of the nozzle having a collar for coaction with the ladle to maintain the nozzle in applied position and constituting the only supporting means therefor, a rotary member disposed through the nozzle, said member having an opening therethrough for registry with the bore of the nozzle when the rotary member is in one position, said member upon requisite turning movement completely closing the flow through the nozzle, said member being tapered, opposed walls of the nozzle having tapered openings through which the member is disposed and providing seats therefor, and means coacting with the member and the nozzle for constantly urging the member into engagement with its seats.

In testimony whereof I hereunto affix my signature.

GEORGE H. J. EISER.