May 28, 1940. G. E. WEST 2,202,180

MOLTEN METAL APPARATUS

Filed Feb. 16, 1939

Fig. 1.

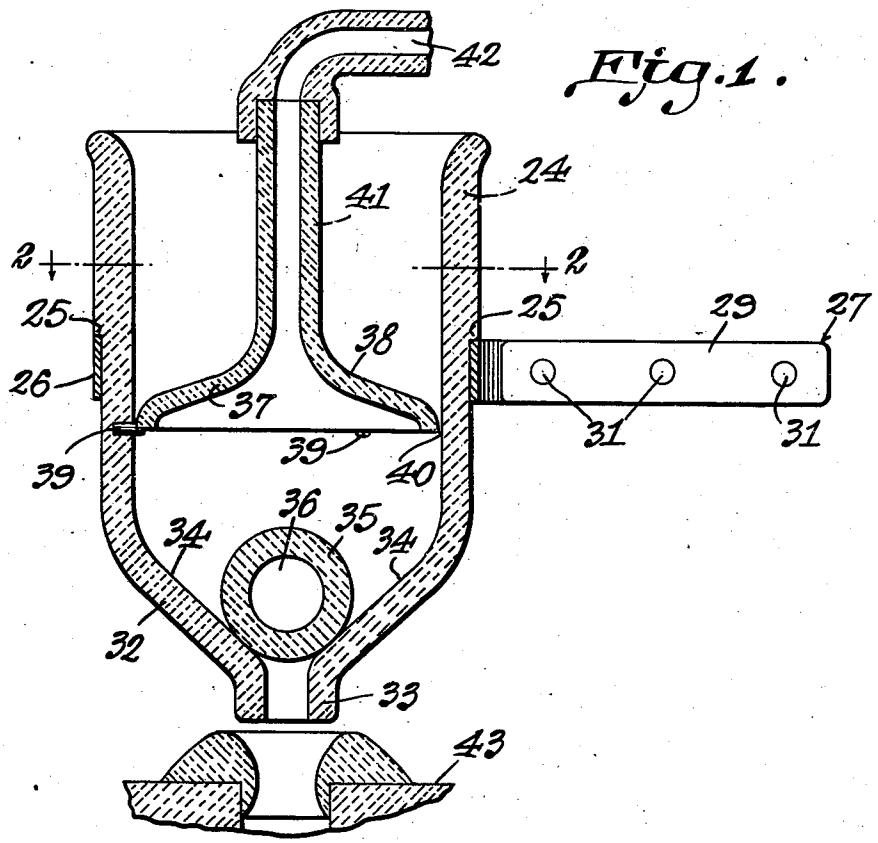
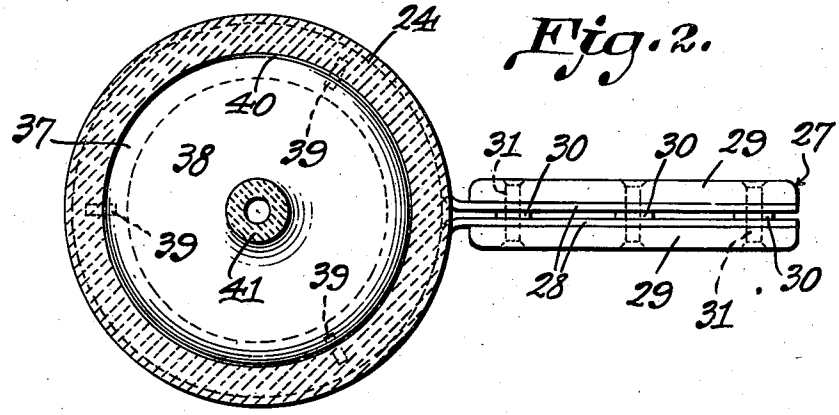


Fig. 2.



George E. West
INVENTOR.

BY C. A. Snow & Co.

ATTORNEYS.

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MOLTEN METAL APPARATUS

George E. West, Kenosha, Wis.

Application February 16, 1939, Serial No. 256,779

1 Claim. (Cl. 266—34)

As is well known, molten metal contains air and gases, which are detrimental to a finished and satisfactory casting, and this invention aims to provide novel apparatus for ridding molten metal of gases and air.

In the accompanying drawing:

Fig. 1 shows in longitudinal section, a device constructed in accordance with the invention;

Fig. 2 is a cross section on the line 2—2 of Fig. 1.

In the drawing, there is shown a container or pouring funnel for molten metal, the container being designated by the numeral 24, and being made out of highly refractory material, such as carbon. The container 24 has a circumscribing external shoulder 25 by which the container may be supported in the eye 26 of a carrying rack 27 which, preferably, comprises handle forming members 28, formed integrally with the eye 26, or connected thereto, the handle forming members 28 being provided with heat insulating grips 29, and spacers 30 being located between the handle forming members 28, on the securing elements 31 which join the grips 29 to the handle forming members.

The container 24 is supplied at its lower end with a reduced neck 32, terminating in a discharge spout 33. The neck 32 forms, in the lower part of the container 24, a conical surface designated by the reference character 34.

A movable member 35, preferably a sphere of carbon or other refractory material, is supported in the lower end of the neck 32 of the container 24 and the movable member 35 may have a cavity 36, regulating the weight of the movable member. The cavity 36 may be adjusted as to size, depending upon the specific gravity of the molten metal which the container 24 receives.

The numeral 37 marks a spreader of inverted dish-like form, presenting an upper surface 38, which slopes downwardly and outwardly from a place near the vertical axis of the spreader to the periphery of the spreader. The spreader 37 is supported on pins 39 or the like, carried by the container 24, the diameter of the spreader 37, at its lower end, being such that there exists, between the periphery of the spreader 37 and the inner wall of the container 24, an annular space 40 of small width. The pins 39 are seated in the lower end of the spreader 37, so that the spreader cannot shift crosswise and vary the width of the opening shown at 40. The spreader 37 is made of refractory material, such as carbon.

The spreader 37 is supplied centrally with an upstanding neck 41, to which may be connected, if desired, a suction conduit 42.

In practical operation, a workman carries the container in his hand, by means of the rack 27, to a place where the molten metal in the container 24 may run into the cope 43 of a flask. The structure is a small, light, hand-carried article.

Molten metal is poured into the receptacle 24. The molten metal is received on the surface 38 of the spreader 37, the dross rising to the top of the molten metal. The molten metal passes downwardly through the opening 40, and is spread out in a thin film on the inner surface of the container 24, below the spreader 37. As the molten metal passes through the space 40, the molten metal is deprived of much of its air and gas. The molten metal moves downwardly, beneath the sphere or ball 35, and raises the sphere or ball, the molten metal finding its way into the mold, by way of the spout 33. When the molten metal, flowing downwardly in a thin film, makes contact with the ball 35, the molten metal is deprived still further of its gas and air. The ball 35 is in constant motion, both upwardly and downwardly, and rotatably, and the action of the ball is to rid the molten metal of its gas and air.

The operator, carrying the device shown, can move rapidly from one mold to another.

The rising air and gas may be sucked away through the pipe 42, or that pipe may be simply an outlet for gas and air.

Especial attention is directed to the fact that the molten metal is deprived of gas and air at two places: first, as the metal flows through the space shown at 40 and second, as the molten metal passes beneath and raises or moves the ball 35.

The word "gas" is used in a broad sense, to designate either air or anything having the physical properties of that substance.

What is claimed is:

A device for ridding molten metal of gas, comprising a funnel having an internally tapered neck provided with a central, bottom outlet; a freely movable member in the bottom of the funnel and normally in peripheral contact with the inner surface of the neck, above the outlet; and means for directing molten metal, in film-like condition, along the inner surface of the funnel, between the inner surface of the funnel and the freely movable member, the specific gravity of the movable member being such, considered relatively to the molten metal, that the movable member will have continuous movement responsive to the film, as the film moves downwardly to the outlet.

GEORGE E. WEST.