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APPARATUS FOR THE PRODUCTION OF CASTINGS

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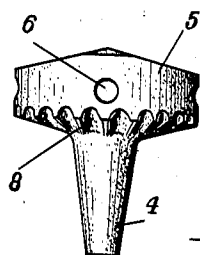
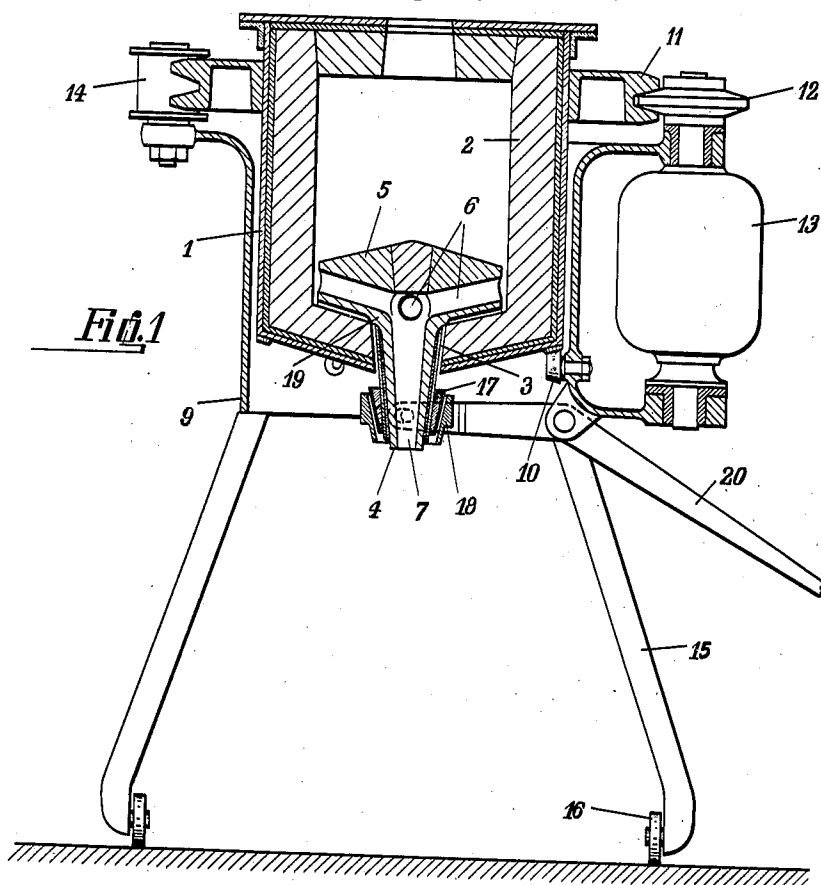


Fig. 2

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APPARATUS FOR THE PRODUCTION OF CASTINGS

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3 Claims. (Cl. 22—65)

It is known to take liquid material from a centrifugal drum through plunger pipes and to lead it into casting molds which are independent of the movement of the centrifugal drum.

However, the plunger pipe on entering into the liquid metal must pass through the inevitable layer of slag, and consequently portions of this slag layer can get into the casting mold.

Furthermore it is not possible by this method to cast iron and steel as, owing to the high melting temperatures, the materials available for the plunger pipe are not sufficiently resistant. Finally the control of the plunger pipe presents considerable difficulties.

Moreover, centrifugal devices are known which operate with casting molds which are independent of the movement of the centrifugal device, in which devices, contrary to the invention, the liquid metal must be transferred into the mold by separate gas pressure.

This method, however, does not allow continuous working, which objection is overcome according to the invention in that the liquid material subjected to the action of centrifugal force in a rotary centrifugal drum flows through the passages of a casting nozzle arranged within the centrifugal drum, and by which the centrifugal force is braked or eliminated during the casting operation.

An apparatus for producing castings according to the invention is illustrated by way of example in the accompanying drawing, in which:

Fig. 1 shows the apparatus in vertical section.

Fig. 2 shows a detail in elevation.

The apparatus consists of a centrifugal drum having a charging aperture and which, when employed for metal, is equipped with a refractory lining 2 and has at the bottom end a central aperture 3 through which an extension 4 of a casting nozzle 5 of refractory material extends which has several radial, preferably inclined passages 6 which lead into the discharge passage 7 in the extension 4.

If the casting nozzle 5 rests on the bottom of the centrifugal drum when the apparatus is started up, its bearing surface may be constructed as a narrow shoulder 19 or, as shown in Fig. 2, have radial grooves 8 tapering towards the centre so that only ribs remain which rest on the bottom of the drum 1.

However, it is not necessary to pack the drum bottom against the liquid material because the centrifugal force of the rotating material forces it back from the central aperture 3 as long as

the apex of the centrifugal parabola lies below the bottom. For this reason the space below the casting nozzle 5 may be of any shape and relatively high.

The control of the casting nozzle may be attained by suitable arrangements outside the drum instead of by the frictional drive within the drum by means of a bead 19 or by the ribs between the grooves 8.

The drum is surrounded by a stationary casing 9 and supported by guide rollers 10 which are mounted in a suitable manner on the casing 9. The drum 1 is driven from a friction rim 11 with which meshes a friction wheel 12 of an electric motor 13 adjustably mounted in a suitable manner on the casing 9. Guide rollers 14 are provided as bearings for the drum 1.

The casing 9, whose axis may be inclined or, if the drum lining is correspondingly shaped, may be horizontal, is preferably mounted on legs 15 which are preferably supported on wheels 16. The lower part of the extension 4 has a clutch cone 17 which preferably has a brake lagging and is engaged by a corresponding hollow conical clutch part 18 which can be raised or lowered by the fork of a two-armed lever 20.

The apparatus operates in the following manner:

Before the drum 1 is charged with molten metal the preheated drum is rotated by the electric motor 13, during which rotating the extension 4 rests on the bottom of the drum and thus participates in the rotary movement of the drum.

After the metal has been centrifuged for a short time, the clutch element 18 is raised by the lever 20 so that it first bears against the clutch part 17 of the extension 4 of the discharge nozzle 5 and partly or completely stops the rotary movement of this nozzle 5.

As, however, the drum rotates continually the centrifuged material, under the action of the centrifugal force and of the continuous recharging of material, flows into the passages 6 of the casting nozzle 5 and out of the passage 7 into the mold.

When the casting mold is full, the nozzle 5 is lowered by means of the lever 20 and the material still contained therein returns into the drum under the action of the centrifugal force and material only again flows out through the nozzle 5 when braking takes place once more.

The apparatus according to the application offers, besides other advantages, that advantage that the whole content of a smelting furnace

can be run through a relatively small centrifugal apparatus without any interruption whatever.

The apparatus is also very simple, easy to operate and owing to its simplicity very robust.

5 I claim:

1. A casting apparatus, comprising in combination a casing, a drum for the molten metal rotatably mounted in said casing and having a central aperture at its lower end on the axis about which the drum rotates, means on said casing for rotating said drum to centrifuge the molten metal, a casting nozzle with radial passages leading to a common discharge passage, loosely inserted in the aperture of said drum and

participating in the rotary movement thereof, and means on said casing for braking said nozzle to effect the discharge of the centrifuged metal through said passages by the action of gravity.

2. A casting apparatus as specified in claim 1, 5 in which the nozzle has a narrow shoulder on its under side bearing against the rim of the aperture in the drum.

3. A casting apparatus as specified in claim 1, in which the nozzle has on its outer surface facing the bottom of the drum radial grooves tapering towards the centre and forming ribs adapted to bear against the bottom of the drum.

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