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2,295,041

DEVICE FOR CASTING ENDLESS METAL CASTINGS

Filed March 21, 1939

2 Sheets-Sheet 1

Fig. 1.

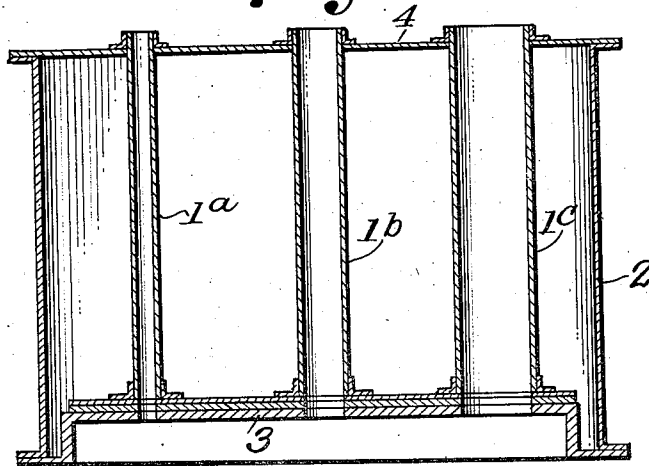


Fig. 3.

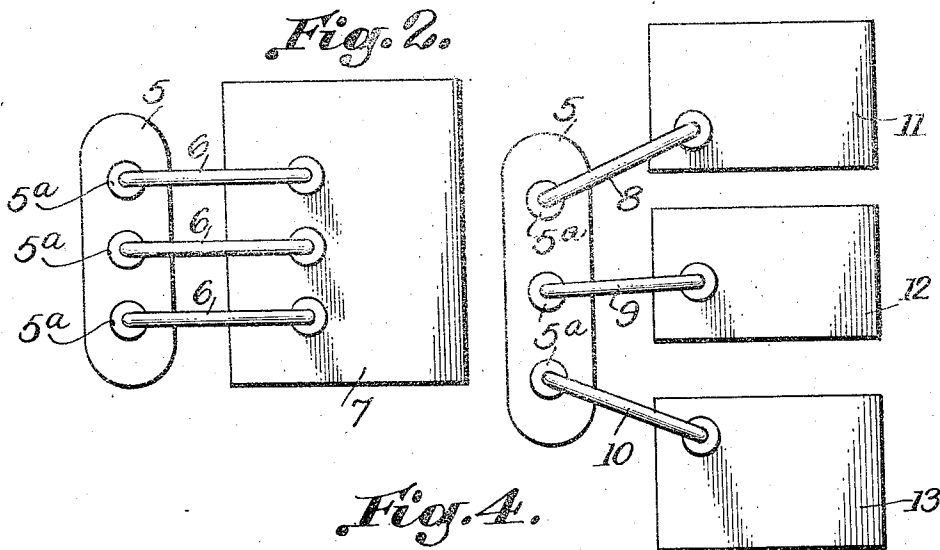
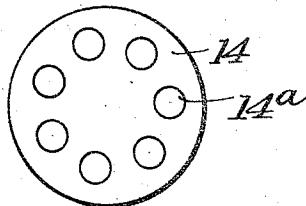


Fig. 4.



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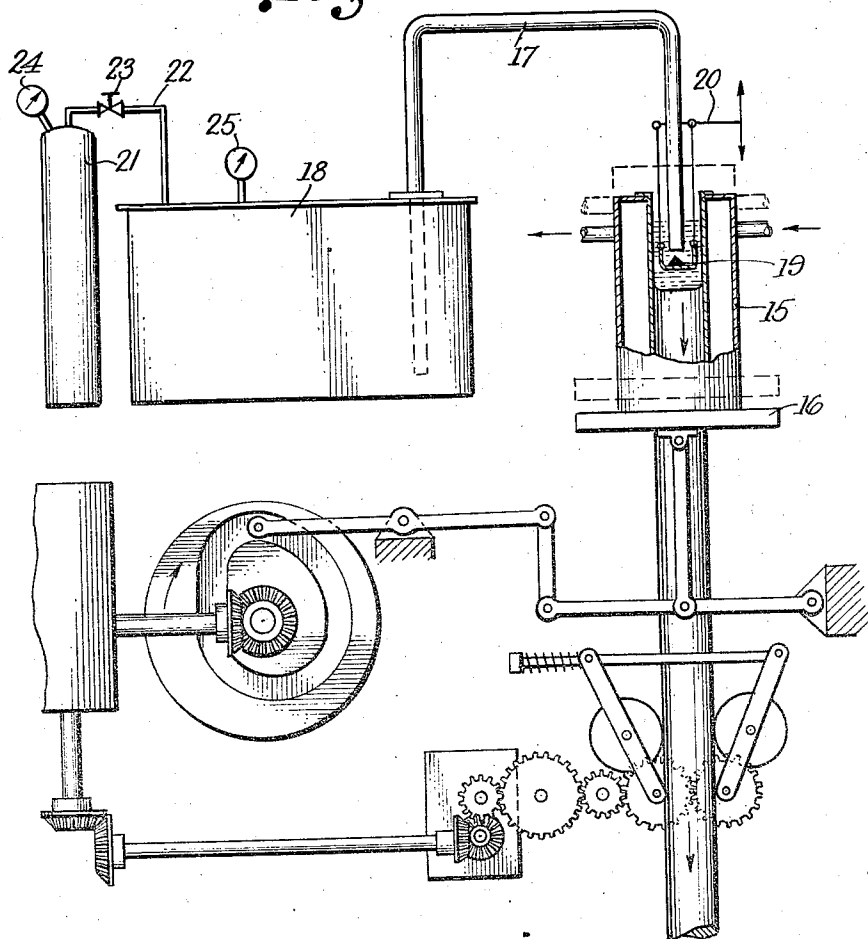
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Fig. 5.



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DEVICE FOR CASTING ENDLESS METAL
CASTINGSSiegfried Junghans, Stuttgart, Germany, assignor
to Irving Rossi, New York, N. Y.Application March 21, 1939, Serial No. 263,267
In Germany July 27, 1936

3 Claims. (Cl. 22—57.2)

This invention relates to a device for casting endless metal castings and has for its object to increase the production of such a device and to reduce the amount of waste.

In plants used for the continuous casting of endless metal castings the production consists mainly of rods having relatively large diameters, which are subsequently pressed in a further operation into thinner rods, sections and the like. In such plants a separate mould is used for each endless casting. In the case where the castings produced the smallest possible diameter there is the advantage that such castings may be immediately worked into finished or semi-finished products, thus eliminating the intermediate pressing stage, a very expensive operation, and at the same time effecting a considerable saving by reducing the amount of scrap metal. By using a smaller diameter for the endless casting to be cast there is however a relatively smaller output from such a plant.

In order to increase the output and at the same time retain the advantage of the elimination of the press operation, tests have proved that the most satisfactory method from the technical and economic points of view is that of utilizing according to the invention, a casting device, consisting of a self-contained mould having several straight hollow moulding chambers open at both ends, and being independent of the molten metal supply pipes. In this case each hollow mould chamber is fed from a separate furnace or from a separate supply pipe in order that the casting speed may be regulated by adjusting the inflow speed according to the temperature of the metal and the cross section of the nozzle.

This arrangement has the advantage that only one casting plant need be provided, whilst the metal conveying mechanism may be subdivided according to requirements and the nature of the metal to be cast, and that for example different metals or different alloys may be cast simultaneously in one and the same plant. Consequently a further feature of the invention consists in that each individual mould chamber is fed from a separate furnace or container. It is of course also possible to feed all the mould chambers from the same furnace. The combining of several hollow mould chambers into one single mould is particularly satisfactory and advantageous when the mould is intended to carry out a to and fro movement or oscillations are to be imparted thereto during the casting process. In such a case, only one lifting table and conse-

quently only one driving device, or only one device for generating the oscillations is required, this feature constituting a further considerable saving. In a vibratory process utilizing a stationary mother-mould it is on the other hand preferable to impart self oscillation to each mould in order to prevent the solidifying endless casting from adhering to the mould.

It has also been found that it is possible to arrange side by side in one mould several mould chambers having large diameters and to feed these mould chambers from an equal number of furnaces. In fact it is also possible to feed all the moulds from one furnace. In this way the output is considerably further increased.

It is true that it is known already to cast several endless castings having relatively small diameters in one working operation. The device utilized for this purpose however consists of several independent moulds each having a hollow chamber and arranged side-by-side in the bottom of a melting furnace, which do not possess similar advantages to those obtained according to the present invention.

The invention is illustrated on the accompanying drawings in which:

Fig. 1 is a longitudinal sectional view of the entire mold structure,

Fig. 2 is a top plan view of the construction of Fig. 1,

Fig. 3 is a top plan view of a modified construction,

Fig. 4 is a top plan view of the further modified construction, and

Fig. 5 is a diagrammatic view partly in section showing a molding system with a regulating device.

Fig. 1 illustrates a structure in which the individual hollow molds 1a, 1b and 1c are constituted as a single mold unit by the cooling jacket 2 having an upper closure plate 4 and a lower closure plate 3. It will be noted that the molds have different diameters increasing from 1a to 1c.

Fig. 2 illustrates a system in which the mold unit 5 is provided with three hollow molds 5a all having the same diameter. A supply conduit 6 leads to each mold 5a and all of the conduits are in communication with a common metal container 7.

Fig. 3 shows a system in which the mold unit 5, having three hollow molds 5a of equal diameter, includes a separate metal container 11, 12 and 13 each communicating with a mold 5a by a supply conduit 8, 9 and 10 respectively.

Fig. 4 illustrates a mold unit 14 in which the individual hollow molds 14a have the same diameter and the molds are arranged in a circle.

Fig. 5 shows a molding system in which the mold 15 is provided on a table 16 which latter is adapted to be moved up and down. For a further explanation of the elements shown in Fig. 5, attention is directed to Patent No. 2,135,184.

In Fig. 5 the regulation of the flow through the supply conduit 17 can be effected in two ways. First the latter can take place by a system according to Fig. 2 wherein the metal is to be drawn from a single furnace or metal container 7 to all three supply conduits in such a way that the flow of metal in each conduit is regulated by a regulating valve 19 provided with rods 20 dependent upon the specific size of the mold. In the second way in the system according to Fig. 3 the flow of metal to the individual molds is regulated by pressure. In this case each metal container 18 (see left side of Fig. 5) is connected with a storage pressure tank 21 by a conduit 22 and the valve 23. Pressure gauges 24 and 25 indicate the pressure in the tank 21 and container 18 respectively.

What I claim and desire to secure by Letters Patent of the United States is:

1. An apparatus for continuously casting a plurality of metal rods of different diameters, comprising, a mold unit having a plurality of

open-ended molds of different diameters, a cooling jacket surrounding the said plurality of molds, adapted to receive a cooling agent, a separate fluid metal supply conduit for each mold of the unit, and means for regulating the feed of the metal through each supply conduit.

2. An apparatus for continuously casting a plurality of metal rods of different diameters, comprising, a mold unit having a plurality of open-ended molds of different diameters, a cooling jacket surrounding the said plurality of molds, adapted to receive a cooling agent, a separate fluid metal supply conduit for each mold of the unit, a common metal container, said supply conduits communicating with the metal container to supply metal to the molds, and a valve for each supply pipe to regulate the flow of metal into its respective mold.

3. An apparatus for continuously casting a plurality of metal rods of different diameters, comprising, a mold unit having a plurality of open-ended molds of different diameters, a cooling jacket surrounding the said plurality of molds, adapted to receive a cooling agent, a separate fluid metal supply conduit for each mold of the unit, and a separate metal container for each supply conduit each supply conduit communicating with its metal container to supply metal to its respective mold.

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