

April 18, 1933.

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1,903,751

DEVICE FOR FEEDING THE CASTING POTS OF LINO TYPE
AND SIMILAR MACHINES WORKING WITH SOFT METALS

Filed June 11, 1931

2 Sheets-Sheet 1

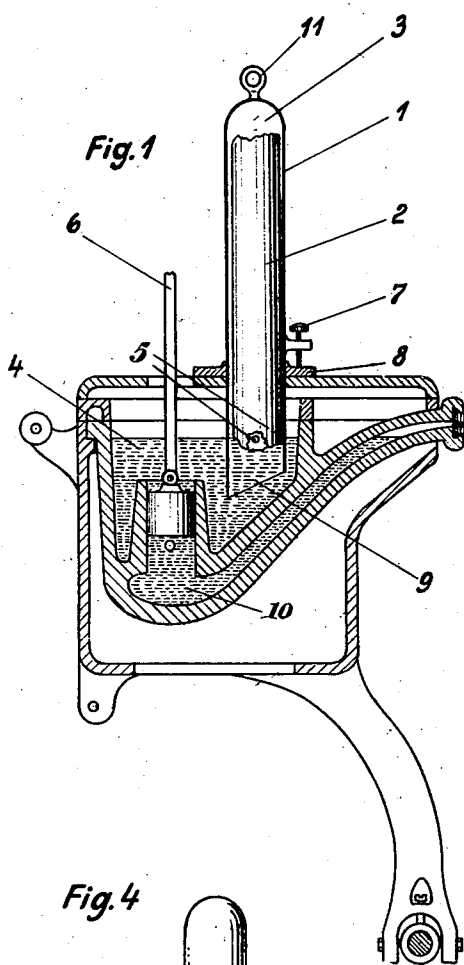


Fig. 4

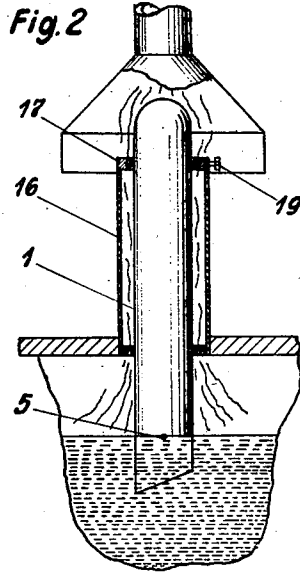
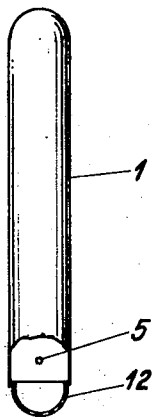


Fig. 2

Fig. 3

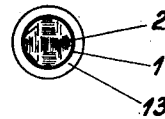
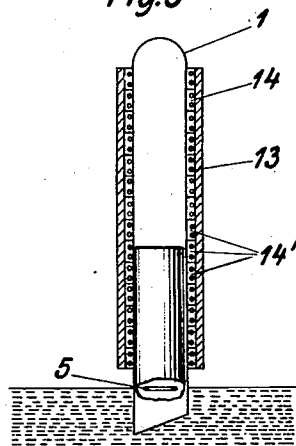


Fig. 5



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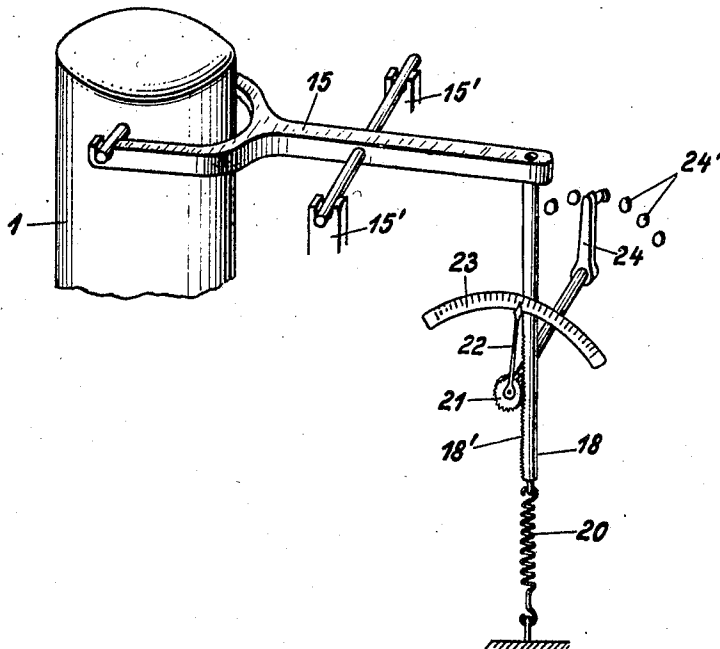
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2 Sheets-Sheet 2

Fig. 6



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DEVICE FOR FEEDING THE CASTING POTS OF LINOTYPE AND SIMILAR MACHINES
WORKING WITH SOFT METALS

Application filed June 11, 1931, Serial No. 543,704, and in Germany May 6, 1930.

Application has been filed in Germany May 6, 1930.

In casting machines in which soft metal is worked, such as the known linotype machines, the casting pot is often fed automatically with fresh metal by means of special devices. For this purpose various mechanical feeding devices are for instance known, which lower a metal bar step by step into the metal bath and thus replace the molten material which has been used. These devices operate in dependence upon an adjustable float which controls the device and thereby holds the surface of the liquid in the pot at the same level.

The object of the invention is to fulfil this purpose in a more simple manner, that is to say, without employing a float or advancing mechanism. The invention consists essentially in utilizing the hydrostatic equilibrium of a liquid in relation to the contents of a vessel air-tightly connected with this liquid.

According to the invention a device for feeding the casting pot of linotype machines and the like is characterized by the fact that by the sinking of the surface level of the metal in the melting pot the hydrostatic equilibrium between the contents of the melting pot and the contents of a supply reservoir which is sealed at the top and immersed in the metal, is disturbed by the release of air inlet openings, whereby the contents of the supply reservoir sink into the melting pot until the equilibrium is restored again and the former level of the metal surface attained. The height of the surface level of the metal can be regulated by raising or lowering the air inlet holes.

It is preferred to close the opening of the supply reservoir by a removable sieve which prevents the metal falling out when the reservoir is set into the melting pot.

It is also advantageous for the supply reservoir to be built in the flue through which the waste gases escape, whereby the filling material is preheated.

In another embodiment of the invention the filling cylinder is enclosed in a heat-insulating envelope. In order to indicate to

the operator the supply of metal still available, the cylinder can be mounted so as to be displaceable in axial direction by a force operating in counter direction through the intermediary of a lever mechanism which converts the vertical adjustments of the filling cylinder into deflections of an indicating device.

According to the invention a preheating of the metal being fed into the melting pot is attained by the fact that the filling cylinder is enclosed by an electric heating device. This heating device can be subdivided into sections adapted to be switched off individually, and in this case the indicating device may be connected with a switch arrangement, which automatically switches off the heating sections one after the other.

Reference will now be made to the accompanying drawings in which a number of constructional embodiments of the invention are illustrated by way of example and in which:—

Fig. 1 is a section taken through the new feeding device as applied for instance to the melting pot of a linotype machine.

Fig. 2 shows the new metal feed device built in the exhaust gas flue, so as to preheat the metal.

Fig. 3 is a section through the filler.

Fig. 4 shows the filling device provided with a sieve.

Fig. 5 shows the filler with an auxiliary heating element, and

Fig. 6 shows an arrangement for indicating the supply of metal still available in the filler, in combination with a device for regulating the heating of the filler.

A hollow cylinder 1 closed at one end and preferably provided with a suspending hook or ring 11 is provided with a metal block or filling 2 corresponding to the dimensions of the cylinder and immersed into the metal bath 4 with the opening 9 downwards. The metal block sinks into the fluid metal bath 4 until the air inlet holes 5 are covered by the fluid metal, and the hydrostatic equilibrium between the metal bath 4 and the filler 1 is set up, so that the filling 2 is suspended freely.

Now if the metal 4 is forced out of the pot 10 by the piston 6, the surface level of the metal falls, liberating the air inlet openings 5, whereby air enters the space 3 in the cylinder 1 above the metal filling 2 and thus disturbs the hydrostatic equilibrium in such a manner that the metal filling 2 sinks into the metal bath until the equilibrium is again set up or the air inlet holes are again closed.

10 This procedure repeats itself continuously, and by suitably adjusting the height of the air holes by means of the set screw 7 which presses on the support ring 8, the height of the surface level of the metal can be exactly defined.

It is also suitable to provide a sieve 12 in the lower opening of the filling cylinder, in order to prevent the metal falling out when the filler is set into the pot.

20 It is immaterial what size, shape and cross-section the hollow cylinder has, but its shape is preferably adapted to the space available in the pot.

The length of the metal block or filling on the other hand is based on the specific weight of the metal being worked, and should therefore amount to 900 mm. for instance in the case of metal for setting machines.

As on account of its close contact with the fluid metal the metal block assumes high temperatures, an insulating envelope 13 is provided on the outside of the filling cylinder 1, which permits the cylinder to be grasped without special auxiliary means when it is changed, and also, on account of its heat insulation, contributes to the economy of the whole arrangement.

When immersing the filled cylinder it is preferred to push through the air inlet holes 5 pins or the like consisting of the same material as the filling, which melt away when the device is immersed in the fluid metal bath and thus set the device into operation.

In order to exhaust the metal vapours formed by the melting process, a flue 16 is provided on each pot, which according to the invention can also be used for setting the filling cylinder into the metal bath. An arrangement of this type is illustrated in Fig. 2. By adjusting the ring 17, which is adapted to be displaceably adjusted on the metal filler and is secured by means of the screw 19, the height of the surface level of the metal can be adjusted here also. This arrangement has the advantage of utilizing the waste gases for warming the fresh metal, so as to save heat.

The operator must always be acquainted with the amount of metal still available in the filling cylinder. For this purpose an indicating device can be employed, which is illustrated diagrammatically in Fig. 6 and operates in the following manner.

The filling cylinder 1 which is displaceable in axial direction, is suspended on a

two armed lever 15 pivotally mounted at 15¹, at whose other end a counterweight or spring 20 engages for instance on a rod 18. The rod 18 is provided with serrations 18¹ which through the intermediary of a cog wheel 21 move an indicator 22 as soon as the vertical position of the filling cylinder changes. This always happens when the size and therefore the weight of the metal supply 2 in the cylinder 1 changes. These changes are immediately made visible on the scale 23.

A further improvement of the feeding device may be obtained by enclosing the cylinder 1 over the largest part of its length with a heating device 14. In this manner, as when the feeding cylinder is arranged in the flue 16, the metal is preheated as it sinks. As however the metal supply in the cylinder 1 gradually becomes smaller, the cylinder empties gradually from top to bottom, so that the heating device 14 would overheat the part of the cylinder which had become empty. It is therefore preferred to subdivide this heating device into a number of sections 14¹ adapted to be separately switched off. In order automatically to switch off the sections 14¹ from top to bottom according as the filling cylinder becomes empty, the indicating device 22 described above may be connected with a switch device 24, 24¹, which switches off the individual heating sections 14¹ one after the other as the cylinder empties.

I claim:

1. A device for feeding molten metal to linotype machines and the like, comprising the combination with a pot for the molten metal, of a supply reservoir carried by said pot and extending into and above a predetermined molten metal level in said pot and closed airtight above said level and having an air inlet opening at said level.

2. A device for feeding molten metal to linotype machines and the like, comprising the combination with a pot for the molten metal, of a supply reservoir carried by said pot and extending into and above a predetermined molten metal level in said pot and closed airtight above said level and having a molten metal discharge opening into said pot below said level and an air inlet opening at said level.

3. A device for feeding molten metal to linotype machines and the like, comprising the combination with a pot for the molten metal, of a supply reservoir carried by and extending into the pot and having a closed upper end extending above a predetermined molten metal level in said pot and communicating with said pot below the top of said pot, and means for raising and lowering said reservoir whereby to determine the molten metal level in said pot.

4. A device for feeding molten metal to

linotype machines and the like, comprising the combination with a pot for the molten metal, of a removable supply reservoir having a closed upper end said reservoir being
5 carried by and extending downwardly into said pot and when in supply position communicating with said pot below the top of the pot, means for supporting said reservoir in supply position, and a sieve for closing
10 the lower end of said reservoir whereby the reservoir and its solid contents may be removed together from said pot.

5. A device for feeding molten metal to linotype machines and the like, comprising
15 the combination with a pot for the molten metal, of a supply reservoir having a closed upper end extending above the top of said pot and extending into and communicating with the pot at a predetermined molten liquid level in said pot, counterbalancing means
20 for supporting said reservoir with respect to the pot and permitting relative movement of said reservoir and a device connected to said reservoir for indicating the vertical position thereof.
25

6. A device for feeding molten metal to linotype machines and the like, comprising the combination with a pot for the molten metal, of a supply reservoir carried by the
30 pot having a closed upper end extending above the top of said pot and extending into and communicating with said pot below its top, an electrical heating device comprising a plurality of independent vertically spaced
35 sections surrounding said reservoir, and means for selectively connecting said sections to a source of current.

7. A device for feeding molten metal to linotype machines and the like, comprising
40 the combination with a pot for the molten metal, of a supply reservoir having a closed upper end extending above the top of said pot and extending into and communicating with said pot below its top, counter-balancing
45 means for supporting said reservoir with respect to the pot and permitting relative vertical movement of said reservoir, an electrical heating device comprising a plurality of independent vertically spaced sections, and means operated by the vertical
50 position of said reservoir for selectively connecting said heating sections to a source of current.

In testimony whereof I have signed my
55 name to this specification.

KASPAR BADER.