April 20, 1948. G. E. STEUDEL 2,439,875

PIG MOLD

Filed Jan. 30, 1947 2 Sheets-Sheet 1

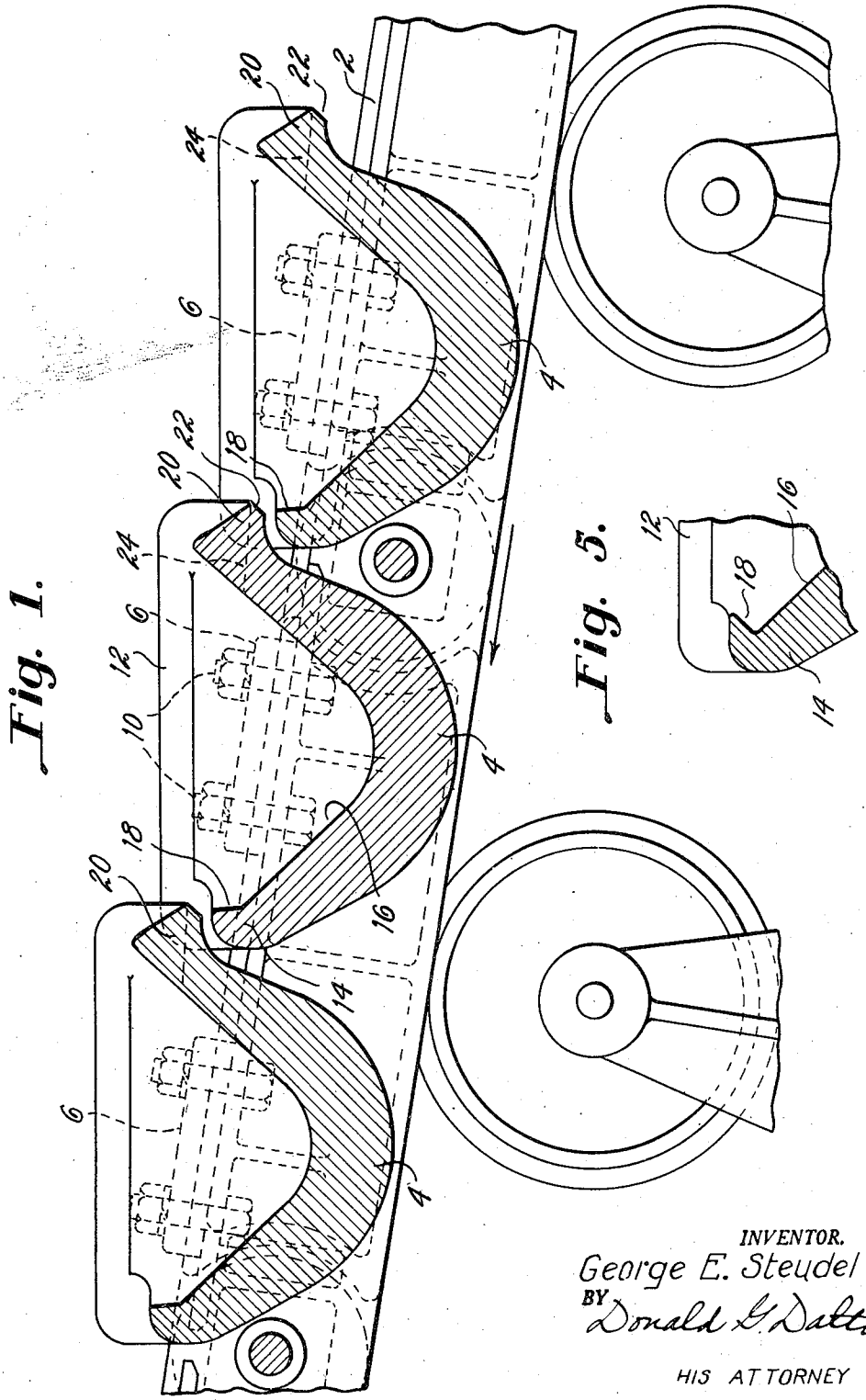


Fig. 1.

Fig. 5.

INVENTOR.
George E. Steudel
BY
Donald G. Dalton
HIS ATTORNEY

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Fig. 2.

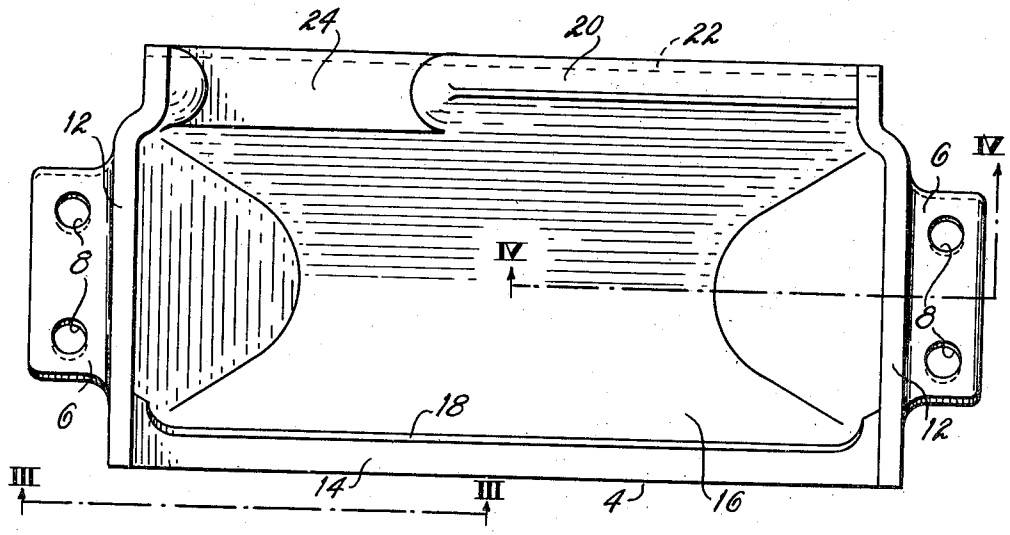


Fig. 3.

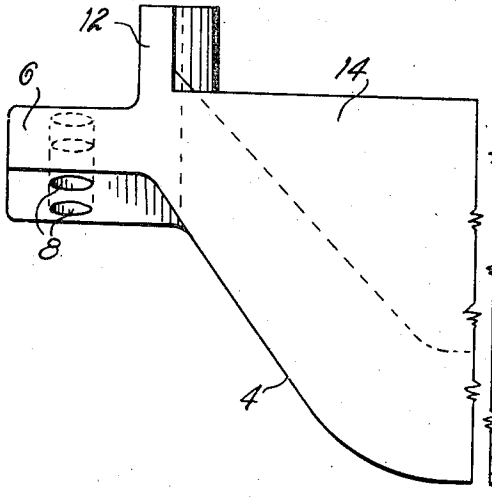
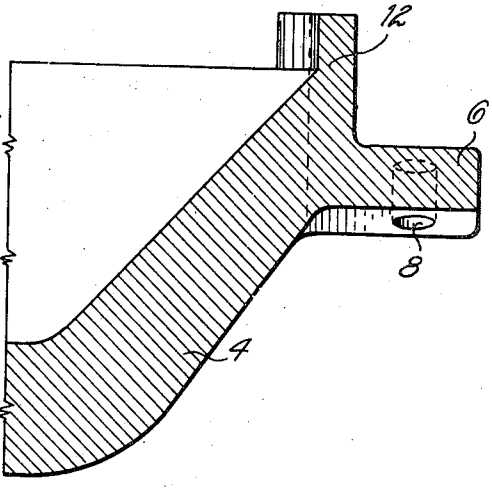


Fig. 4.



INVENTOR.
George E. Steudel
BY
Donald G. Dalton
HIS ATTORNEY

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2,439,875

UNITED STATES PATENT OFFICE

2,439,875

PIG MOLD

George E. Steudel, Chicago, Ill., assignor to Carnegie-Illinois Steel Corporation, a corporation of New Jersey

Application January 30, 1947, Serial No. 725,180

1 Claim. (Cl. 22—62)

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This invention relates to a mold and is a continuation-in-part of my copending application, Serial No. 563,204, filed November 13, 1944 and now abandoned. The invention is particularly adapted to molds for use in a pig machine. In making pigs, the liquid metal is poured from an iron ladle into a pot to which is attached a gradually sloping runner, which, at its lower end, branches into two runner spouts extending in opposite directions. Under the ends of these spouts are two endless chains on which the pig molds are attached. As the molten metal leaves the spout, it drops a distance of ten to thirteen inches before it enters the mold and the force of the metal entering the mold, especially in the initial stage of filling the mold, forces the metal upward in the mold in a series of momentary surges along the sloping side walls. The ends of the mold may be built sufficiently high to prevent spillage, but the sides cannot be and the metal spills over the side walls. The molds are arranged in overlapping relationship on the conveyor with the overlapping side toward the rear and therefore the spillage on this side will flow into the succeeding mold. On the underlapping side, the molten metal will spill out of the molds heretofore used, thus producing excessive scrap, especially under the pouring end of the machine. At times the scrap builds up to such an extent that it reaches the chain of the conveyor and the machine must be shut down for its removal, thus causing loss of production. There is also the possibility of the scrap causing a mechanical breakdown of the conveyor. In addition, the scrap must be remelted, this further decreasing the efficiency of the casting operation. The production of scrap can be reduced by the present type of mold by operating the machine at a lower rate of speed, but this decreases the capacity of the machine and adds greatly to the cost of pigging. With molds now in use the average scrap loss is approximately 3½%, whereas the scrap loss with the mold of the present invention is approximately 1½%.

It is an object of this invention to provide a mold which will reduce the spillage of molten metal being poured into the mold.

This and other objects will be more apparent after referring to the following specification and attached drawings, in which:

Figure 1 is a vertical section through the molds assembled on the conveyor;

Figure 2 is a plan view of the mold;

Figure 3 is a half-side view on the line III—III of Figure 2;

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Figure 4 is a half-sectional view on the line IV—IV of Figure 2; and

Figure 5 is a fragmentary vertical section similar to Figure 1, but showing a modification of the retaining wall.

Referring more particularly to the drawings, reference numeral 2 indicates the conveyor of the pig casting machine which is traveling from right to left as seen in Figure 1 and to which the molds 4 are attached in overlapping relationship. Each of the molds 4 is provided with flanges 6 on the ends, the flanges being provided with holes 8 for receiving bolts 10 which fasten the mold to the conveyor in the usual manner. The end walls 12 of the mold are of sufficient height to prevent spillage of the molten metal therefrom. In the original mold design the underlapping side 14 of the mold has a sloping side throughout its length, over which the molten metal spills. In the mold of my invention, the sloping side 16 is preferably arranged at an angle of approximately 45° with the horizontal, but may be arranged at an angle of from 30 to 60°, the top of the side 16 terminating in a retaining wall 18 at the upper inside surface of the underlapping side which extends upwardly therefrom at an angle with the vertical which varies from substantially zero, as shown in Figure 1, to 45°, as shown in Figure 5. During pouring the sheets of molten metal are forced upward along the side and strike this retaining wall 18, which directs the metal back into the mold. The overlapping side of the mold is preferably provided with an overlapping lip 20 which is provided with a deflector surface 22 on its bottom and arranged at substantially the angle shown directly above the retaining wall 18 of the adjacent mold. If the force of the upward flow of the molten metal is excessive and extends some distance above the underlapping side of the mold, it will strike the deflector 22, which deflects the flow of the metal back into the mold. This surface 22 is not always necessary and is not used when the wall 18 extends inwardly above the side 16. The upper part of the overlapping lip 20 is cut away at 24 to provide an overflow notch with rounded corners, the bottom of the notch being in substantially the same horizontal plane as the base of wall 18 so that the top surface of the pig will not extend above the base of wall 18. Due to the jerking caused by the chain drive and the contraction of the metal on cooling, the level of the frozen metal will be slightly below this horizontal plane so that there will be no danger of sticking due to the wall 18.

While one embodiment of the invention has been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claim.

I claim:

In a pig molding machine comprising an endless conveyor adapted to carry a plurality of pig molds in overlapping relationship, the combination with said conveyor of an open pig mold comprising a flat bottom, sloping end walls, sloping side walls, a retaining wall extending above the side wall on the underlapping side, said retaining wall being arranged with respect to the horizontal plane passing through the bottom of the retaining wall in such a manner that the retaining wall makes an angle of from 45° to 90°

to the portion of said plane that passes over the mold cavity, an overlapping lip on the overlapping side, and an overflow notch extending through the overlapping lip, the bottom of said notch being at substantially the same elevation as the bottom of the retaining wall.

GEORGE E. STEUDEL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
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788,964	Uehling	May 2, 1905