E. G. COOK.

CASTING OR MOLDING DEVICE.

APPLICATION FILED SEPT. 8, 1916.

1,250,803.

Patented Dec. 18, 1917.

2 SHEETS—SHEET 1.

Fig. 4.

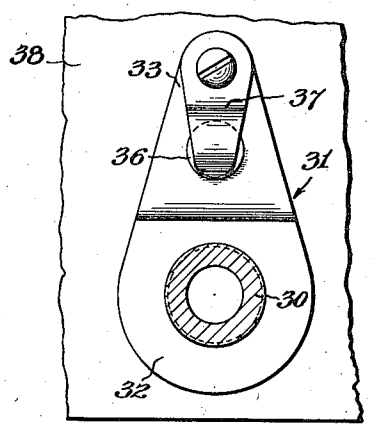


Fig. 1.

Fig. 2.

Witnesses:

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H. D. Penney

Inventor:

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By his Atty. F. H. Richards

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2 SHEETS—SHEET 2.

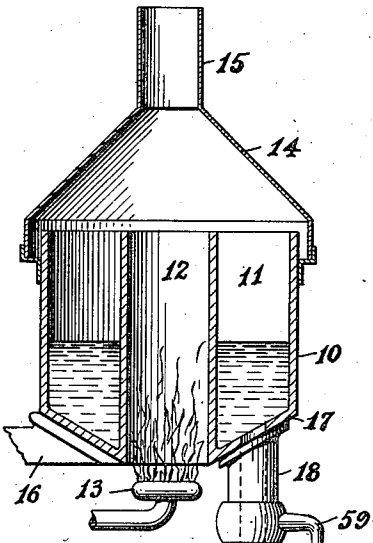


Fig. 5.

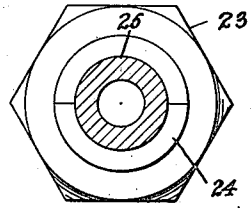


Fig. 2.

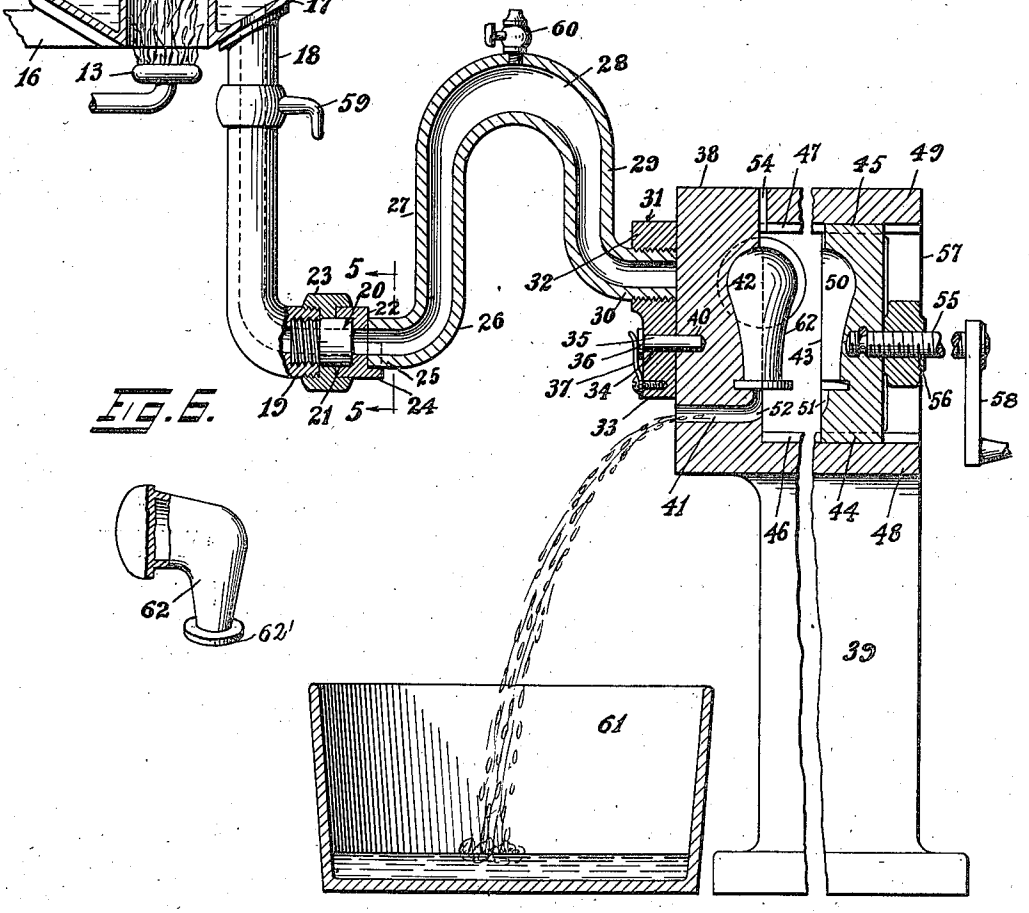


Fig. 6.

Witnesses:
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UNITED STATES PATENT OFFICE.

EDWARD G. COOK, OF LONG ISLAND CITY, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO COPPER PRODUCTS COMPANY, A CORPORATION OF MAINE.

CASTING OR MOLDING DEVICE.

1,250,803. Specification of Letters Patent. Patented Dec. 18, 1917.

Application filed September 8, 1916. Serial No. 118,975.

To all whom it may concern:

Be it known that I, EDWARD G. COOK, a citizen of the United States, residing in Long Island City, in the county of Queens and State of New York, have invented certain new and useful Improvements in Casting or Molding Devices, of which the following is a specification.

This invention relates to molding devices, for use in the forming from fluid metal of hollow articles of any form without the use of cores, and practically applies to the art of slough-molding, wherein the mold is first completely filled, and when the chilling effect of the mold has solidified the outer surface sufficiently to form a "chill" or shell while the center is still filled with the fluid metal, this surplus still fluid central portion of the metal is allowed to flow out, and this, so far as I am aware, has been heretofore only brought about either by inserting a trochar through the mold and the "chill", into the still fluid central portion of the article being formed, and allowing the surplus metal to flow out through the puncture so made; or in some cases, by inversion of the mold so as to permit such surplus to flow out through the sprue. In my improved form of molding apparatus, herein shown, there is no trocharing or inversion, the mold being stationary, and the fluid metal enters, and the central surplus is drained off, through a sprue at the bottom.

When one solid casting of lead, etc., was used for such mold, certain serious disadvantages were presented, among which were the amount of the metal used for a mold, thereby making the proposition a rather expensive one; the fact that the solid metal casting on being melted out would expand to such an extent that the shell cast thereon would thereby frequently be fractured, if not entirely destroyed; and the length of time required to produce such a mold, first on account of the long time required to harden and cool the mold after it has been formed, and then also on account of the extra time required to pour the great quantity of lead both when forming the mold and when supplying the original source.

In view of the foregoing disadvantages, one of the main objects of the present invention is to provide an easily fusible mold of electro-conductive material, such as lead, or its alloys, etc., that is comparatively inexpensive to manufacture on account of its light weight and the short length of time necessary to make, and that will very effectively serve for producing light shells formed thereon by electro-deposition without any danger whatever of fracturing or destroying the shells being produced.

To this end I have provided an apparatus of a new and improved type, wherein a hollow male-mold, is quickly molded from lead, or alloys thereof, etc., upon which, metal of higher fusion point may be electrolytically deposited, after which, the mold of lead, etc., may be easily removed by submitting the same to a fusive heat.

Broadly considered, my improved apparatus herein, shown, described and claimed, comprises means whereby a cast-iron, or other suitable female-mold, receives the molten lead, or other metal, alloy or material; chills the portion coming in contact with the walls of the mold cavity to form a thin shell; and whereby the remaining still molten central metal portion is quickly removed from the cast-iron female mold, thereby leaving a thin shell of lead, etc.

My said apparatus is more especially adapted and designed for use in the formation of articles of metals or other materials of comparatively low fusion point, that, even when in their solid state at ordinary temperatures, they are somewhat soft; and while metals like lead or its alloys, by reason of low fusing point are particularly adaptable for the purpose of making such hollow articles, my apparatus may be used with advantage in forming the same of any metal, wax, or like suitable substance or material, capable of being used in any case; such for instance as casting articles of metals fusible at low temperatures, such as that of boiling water, (212° F.), as do the alloys used in thermostatic-trips in automatic fire-extinguishing apparatus, fusing at 155° F., etc. Lead and other metals, or alloys of similar character, of low fusion point, and electric conductivity, are particularly adaptable for use in forming male-molds used as bases for electro-deposition thereon, to form a completed article; and

after the electro-deposition the male mold-blank is removed from the electrolytically formed casing or shell, by fusing, usually by a blast-flame, mainly directed upon the interior of the hollow male-mold, while permitting the fluid metal to flow away by gravity through the sprue orifice as fast as fused.

My improved method of making such articles, part of which includes the casting of the male-molds in the apparatus herein disclosed, I have not described herein, as the same is fully shown, described and claimed in my co-pending application Serial No. 118,974, filed September 8th, 1916, simultaneously herewith.

The present invention further contemplates the provision of means whereby only the better grade of molten lead is conveyed to the mold, also means whereby the operator is immediately notified when the cast iron mold is filled with the required amount of molten lead; means whereby the lead can be quickly shut off when the required amount has been supplied; and means whereby the active conduits can be quickly drained of their contents when the operation is to cease, thereby to prevent the constipating of the apparatus by the hardening of the lead in such conduits during the time that the apparatus is not in use.

When making lead molds a factor to be considered is the great shrinking qualities of lead, and the shrinkage would, of course, be more pronounced the greater the mass of metal used. In view of this characteristic, due to the small quantity of lead used for the largest molds, the present invention sets forth the manufacture of a mold in which distortion, due to shrinkage, is a negligible quantity.

It is also to be noted that when very large molds are made, if these should be made of a solid lump of metal, great difficulty would be experienced in retaining the shape of the same. The foregoing difficulty is entirely overcome by the present shell formed mold.

The present invention further contemplates the provision of a mold making device in which the supply of metal and the withdrawal of the surplus metal from the mold forms is entirely dependent upon the force of gravity, no exterior force being required, whereby the manufacture of such molds is kept down to a minimum.

The present invention still further contemplates the provision of a cast iron forming mold for receiving the molten lead, which forming mold will be removed from the supply source of molten lead and be of sufficient thickness so that heat received from the molten lead will be comparatively small and quickly dissipated thereby to present a comparatively cool forming mold for successive operations.

These and other features, capabilities and advantages of the invention will appear from the subjoined detail description of one specific embodiment thereof illustrated in the accompanying drawings, in which—

Figure 1 is an elevational view partly in section showing the apparatus in position for supplying the mold forming mold.

Fig. 2 is a similar elevational view partly in section illustrating the apparatus in position for permitting the discharge of the surplus metal after the shell has been formed.

Fig. 3 is a fragmental sectional view showing the resulting shell formed by the present apparatus still positioned in the apparatus.

Fig. 4 is a fragmental elevational view on the line 4—4 of Fig. 1.

Fig. 5 is an enlarged sectional view on the line 5—5 of Fig. 2.

Fig. 6 is a perspective view of one form of shell detached from the apparatus after having been formed thereby.

In the embodiment illustrated there is provided a suitable lead melting pot 10 having an annular housing 11 for the reception of the molten metal and a central fire passage 12 at the bottom of which the combustion bed or torch 13 is disposed. To the outer wall of the housing 11, and secured to the upper portion thereof, is formed the hood 14 terminating at its upper end in the flue or chimney 15. The housing 11 is supported in any desired manner, usually by being bolted or otherwise secured to a bracket 16, by bolts or other means not shown, which bracket is usually secured to the annular downwardly and inwardly inclined bottom-plate 17, through the center of which passes the vertical fire-passage or heating-flue 12, below which is located the burner 13, which flue 12 communicates at the top with the escape chimney 15. Extending downward from the annular bottom-plate 17, and in communication with the interior of the melting-pot so formed, is the molten metal feeding conduit 18, forming the initial portion of the conduit for conveying the molten metal to the mold hereinafter to be described. The conduit 18 preferably conveys the metal from the housing 11 to the mold hereinafter to be described. The conduit 18 preferably extends downward a considerable distance in a straight vertical line and then turns off at an angle, preferably 90 degrees to said straight portion, terminating in the portion 19 which is externally and internally screw threaded. Engaging the internal screw threads of the portion 19, and thereby secured to such portion 19, is the bushing 20 which has a seat 21 for the reception of the bearing 22. Engaging the external screw threads of the portion 19 is a collar portion

23 which engages the bushing 20 and extends over the bearing 22, thereby reinforcing the several parts to properly support the bearing 22. The bearing 22 has a bore in alinement with the bore of the bushing 20 and has a semi-circular flange 24 on its lower side to receive the free end 25 of the goose-neck pipe connection 26, the bore of which free end 25 is in alinement with and substantially of the same dimension at its free end as the bores of the conduit 18, bushing 20, and bearing 22. The free end 25 has a loose connection with the bearing 22 to permit its ready removal when desired, and also to permit its ready rotation relative to and on such bearing 22. The pipe connection 26 is provided with an angle just beyond the free end 25, continuing for a considerable distance from such angle in the substantially straight downwardly extending portion 27 which terminates in the large belly portion 28 at its lower end, and which pipe connection 26 makes another turn terminating in the upwardly rising portion 29 which extends upward a comparatively short distance to terminate in the short end portion 30 secured to the pivotal block 31. The portions 25, 27, 29 and 30 of the pipe connection 26 are substantially of the same bore dimension as the bore dimension of the conduit 18, but the belly portion 28 is of considerably greater dimension to form a reservoir for the reception of the heavier and better grade of metal, this belly portion 28 forming the lowest level of the system to which the molten metal can flow before reaching the mold. Since dross and the inferior grades of metals seek the highest levels, the belly portion 28 will thus form the depository of the finally refined metal and in addition by its conformation afford a final opportunity for the dross to separate out before the metal is permitted to rise up through the portions 29 and 30 to the mold, the greater diameter of the belly portion 28 tending to retard the flow of the metal and thereby permitting any dross that may have been carried to this mold level to separate out and rise before passing into the portions 29 and 30.

The pivotal block 31, as shown in Fig. 4, is substantially pear-shaped in outline, the portion 30 of the pipe-connection 26 being secured to the enlarged portion 32 of the block 31, and the upper diminished portion 33 of the block 31 being provided with a pivotal pin opening 34 for the reception of the pivotal pin 35, which is provided with a head 36 against which the spring 37 will be strained for maintaining the pin 35 in place. The spring 37 is pivotally connected to such block 31 to permit the same to be swung away from the head 36 to facilitate the removal of the pin 35 when desired. The opening 34, and the pin 35 when disposed therein, are axially in alinement with the portion 25 of the pipe connection 26.

As forming the forming mold for the apparatus, there is provided the fixed cast iron portion 38 provided with the standard 39 by means of which the portion 38 is disposed to approximately the same level as the bearing 22. The outer portion of the mold half 38 is provided with an orifice 40 which is axially in alinement with the bearing 22 and adapted to receive the pin 35. When the pipe connection 26 and block 31 are thus positioned, they will be free to rotate about a line passing through the axis of the bearing 22 and orifice 40. The portion 38 is provided with a diminished passageway or sprue 41 horizontal in direction and disposed in alinement with the portion 30 of the pipe connection 26 when such pipe connection 26 is disposed with its belly portion 28 extending downwardly. The passageway or sprue 41 forms a communication through the portion 38 to the mold depression 42 formed in the inner side of said portion 38. For cooperating with the fixed portion 38 of the forming mold is the movable portion 43 which is provided with ribs 44 and 45 extending into the guideways 46 and 47 formed in the extensions 48 and 49, respectively, of the portion 38, the extension 48 being the upper portion of the standard 39, and the extension 49 being spaced therefrom and above the extension 48. The portion 43 is movably mounted between the extensions 48 and 49, and is provided with a mold depression 50 forming the other half for the depression 42 and coöperating therewith to form the forming mold. The depression 50 is also provided with a small depression 51 to coöperate with the depression 52 in the portion 38 which together form the upward extension on the passageway 41 to form the riser or guide opening 54 passing through the upper portion of the mold portion 38, the portion 38 and portion 43 coöperating with one another.

For actuating the portion 43, the screw 55 is provided one end of which is fixed to the portion 43 and the body portion of which meshes with the screw threaded opening 56 formed in the cross piece 57 extending from the extension 48 to the extension 49. The screw 55 is provided with a crank 58 at its outer free end whereby the same may be actuated with facility.

For draining off the contents of the conduit 18, pipe connection 26, and forming mold portions 38 and 43 when the work is to be stopped for any length of time, the stop cock 59 is provided in the conduit 18, thereby first to cut off any further supply of metal to the conduit 18 and consequently the pipe connection 26, and the stop cock 60 is provided in the belly portion 28, that is in the

lower portion of the belly portion 28 when such belly portion 28 extends downward, by means of which stop cock 60 a discharge may be provided through which the contents of the conduit pipe 18, pipe connection 26 and mold forming portions 38 and 43 may flow into the receptacle 61 disposed below such discharge for receiving such contents.

The diameter of the bores of the conduit 18 and pipe connection 26 is much greater than the diameter of the bore of the passageway or sprue 41. It has been found that much the purer and better grade of metal when molten, especially molten lead, will be carried in the core or central part of a flowing stream. By the foregoing arrangement, the central portion or core of the molten lead will thus be drained from the pipe connection 26 and only the best grade of metal conveyed to the forming mold portions 38 and 43.

As herein shown, my said molding-apparatus is more especially designed and adapted for use in forming hollow male-molds, as bases for forming thereon by electro-deposition, of metal of higher fusible point than the mold, phonograph-horn elbows efficiently, quickly, and cheaply; and one of such finished electro-deposited horns is shown in Fig. 6 at 62; and the same differs from the male-molds formed in this device, only in that in the molds the orifice 62′ is closed by a web.

The operation of the present device is substantially as follows: Assuming that the lead pot 10 is filled with metal, and the burner has been started and the lead molten, the pipe connection 26 positioned with its portion 25 seated in the bearing 22, its belly 28 extending downwardly, and the pin 35 spring pressed in the openings 34 and 40, the portion 43 driven in tight against the portion 38 by the screw 55 and the stop cock 60 shut off,—then upon opening the stop cock 59 the molten lead will flow down through the conduit 18, pipe connections 26, 27 and 28 and through the sprue passageway 41 up into the forming mold-cavity 42—50, formed by such depressions in the mold portions 38 and 43 until the operator notices, through the riser 54, that the mold portions 38 and 43 are entirely full, whereupon the operator immediately swings up the pipe connection 26 about bearing 22 and the pin 35, whereby the opening from the portion 30 will be cut off, this by the face of the mold portion 38, as illustrated in Fig. 2, and the free end of the passageway 41 exposed so that the still fluid contents of the central portion of the mold will flow out and discharge into the receptacle 61. The lead flowing out, of course, is only that portion which has not been chilled to form the shell desired, it being understood that only a very thin shell will be formed in the forming molds 38 and 43. Then the operator, while the pipe connection 26 is still in its raised position, will quickly draw the mold portion 43 from the mold portion 38 and when so drawn away a sufficient distance by the assistance of a hook or other means suitable for the purpose, the resulting shell may quickly be removed from the portion 38.

The stop cock 59, after the operation has once been commenced, and for successive operations, will not be turned until it is desired to stop the operation of the apparatus for any length of time, the cut-off occasioned by the coöperation of the mold portion 38 with the pipe portion 30 sufficiently serving to cut off the metal between successive operations.

When, however, it is desired to stop the operation of the apparatus for any length of time then the stop cock 59 is turned to cut off the supply of metal thereto and the pipe connection 26 swung down, and then the stop cock 60 opened to permit the metal contained in the conduit, pipe connection 26 and mold portions 38 and 43 to flow therefrom into the receptacle 61.

The length of the conduit 18 and pipe connection 26 is determined according to the length of drop required from the melting-pot 10 to produce the best grade of metal required, the dross and inferior metal seeking the highest level and thus the greater the drop the better the grade of metal produced at the lowest level.

For disconnecting the pipe connection 26 from the apparatus for the purpose of cleaning, repair or the like, it is only necessary to swing the spring 37 out of the way of the pin 35, remove such pin 35 and then raise the pipe connection 26 upwardly.

From the foregoing arrangement it will be seen that the present system of lead pot 10, conduit 18 and pipe connection 26 readily adapts itself to feed any size mold desired, and that all that would be necessary for changing the design or size of the mold would be to change the construction of the portions 38 and 43, respectively.

As appears from the illustration, care must be exercised to locate the forming molds at a level considerably lower than the lead melting pot, this for the purpose of obtaining a great drop from the lead melting pot to the belly portion to facilitate the effective rise of the dross and inferior metal, and the difference in level also being conducive to obtain a high velocity of the molten metal when flowing from the lead melting pot to the forming molds.

Wherever in the description or in the claims I have frequently used the word "lead," I do not intend in any case to limit myself strictly to such metal, but intend to

cover thereby, any fusible metal, alloy or material suitable to be used in casting articles of the type described.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention.

I claim:

1. A lead mold making device comprising a source of molten-metal or lead supply, a forming mold, a conduit from the source of supply to the forming mold, the source of supply being disposed at a level above the forming mold so that the lead may flow from said source of supply to said forming mold and the dross and lower grades of metal be permitted to rise and separate from the higher grade of metal before the lead reaches the forming mold, means for indicating to the operator when the forming mold has been filled, and cut-off means for cutting off the feed of lead to said forming mold when the forming mold has been filled to permit the discharge from said forming mold of all of the lead that has not been chilled in the forming mold.

2. A lead mold making device comprising a source of molten-metal or lead supply, a forming mold, a conduit from the source of supply to the forming mold, the source of supply being disposed at a level above the forming mold so that the lead may flow from said source of supply to said forming mold and the dross and lower grades of metal be permitted to rise and separate from the higher grade of metal before the lead reaches the forming mold, means for indicating to the operator when the forming mold has been filled, and means for cutting off the feed of lead to said forming mold and forming a discharge from said forming mold whereby the surplus lead not chilled in the forming mold may be discharged therefrom.

3. A lead mold making device comprising a source of molten-metal or lead supply, a forming mold, a conduit section fixed to said source of supply and extending downwardly therefrom, and a pivotally connected pipe connection pivoted between said fixed conduit section and said forming mold, the pipe connection in one position forming a communication from said fixed conduit to said forming mold to permit the lead to flow from the source of supply to said forming mold and in another position cutting off the passage of lead.

4. A lead mold making device comprising a lead melting pot, a forming mold, a conduit section fixed to said melting pot and extending downwardly therefrom, a pivotally connected pipe connection pivoted between said fixed conduit section and said forming mold, there being a passage in said forming mold, the pipe connection in one position forming a communication from said fixed conduit to said passage to permit the lead to flow from said lead pot to said forming mold and in another position to cut off the passage of lead to said passage and open said passage so that the surplus lead in said forming mold may discharge therefrom.

5. A lead mold making device comprising a lead melting pot, a forming mold, a conduit section fixed to said melting pot and extending downwardly therefrom, a pivotally connected pipe connection pivoted between said fixed conduit section and said forming mold, there being a passage in said forming mold, the pipe connection in one position forming a communcation from said fixed conduit to said passage to permit the lead to flow from said lead pot to said forming mold and in another position to cut off the passage of lead to said passage and open said passage so that the surplus lead in said forming mold may discharge therefrom, the passage in said forming mold being of less diameter than the bore of said pipe connection and conduit section so that only the high grade metal which seeks the center or core of the bore will be conveyed into said forming mold.

6. A lead mold making device comprising a source of molten-lead supply, a forming mold, a conduit section fixed to said source of supply and extending downwardly therefrom, and a pivotally connected pipe connection pivoted between said fixed conduit section and said forming mold, the pipe connection being in the form of a goose-neck loop and when the loop extends downwardly forming a communication from said fixed conduit to said forming mold to permit the lead to flow from said source of supply to said forming mold, and when extending upwardly cutting off the passage of lead to said forming mold.

7. A lead mold making device comprising a source of molten-metal or lead supply, a forming mold, a conduit section fixed to said source of supply and extending downwardly therefrom, and a pivotally connected pipe connection pivoted between said fixed conduit section and said forming mold, the pipe connection being in the form of a goose-neck loop and when the loop extends downwardly forming a communication from said fixed conduit to said forming mold to permit the lead to flow from said source of supply to said forming mold, and when extending upwardly cutting off the passage of lead to said forming mold, the middle of said loop having a greater bore diameter than the bore diameter of the remaining portion of the loop so that when said loop extends downwardly such enlarged bore portion will serve as a reservoir to facilitate the

further refinement of the high grade of metal from the dross and lower grades of metal.

8. A molding device comprising a melting-pot, a forming-mold, a substantially vertical conduit-section fixed to said melting pot and extending downwardly therefrom; a pivotally connected pipe-connection, pivoted between said fixed-conduit section and the forming mold; a mold sprue; the pipe-connection being in the form of a goose-neck loop, which when the loop extends downwardly forms a communication between said fixed-conduit and the mold sprue, to permit the molten metal or material to flow from the melting-pot to the forming-mold, and when the loop extends upwardly cuts off the passage of the same to said forming-mold, and thereby opens the sprue, so as to permit the surplus central unsolidified metal or material to flow by gravity out through the sprue.

9. A lead mold making device comprising a source of molten-metal or lead supply, a forming mold, a conduit section fixed to said source of supply and extending downwardly therefrom, a pivotally connected pipe connection pivoted between said fixed conduit section and said forming mold, the pipe connection being in the form of a goose-neck loop and when the loop extends downwardly forming a communication from said fixed conduit to said forming mold to permit the lead to flow from said source of supply to said forming mold, and when extending upwardly cutting off the passage of lead to said forming mold, and a removable connection between said loop and said fixed conduit and forming mold whereby said loop can with facility be removed.

10. A lead mold making device comprising a source of molten-metal or lead supply, a forming mold, a conduit section fixed to said source of supply and extending downwardly therefrom, a pivotally connected pipe connection pivoted between said fixed conduit section and said forming mold, the pipe connection being in the form of a goose-neck loop and when the loop extends downwardly forming a communication from said fixed conduit to said forming mold to permit the lead to flow from said source of supply to said forming mold and when extending upwardly cutting off the passage of lead to said forming mold, a valve in said fixed conduit whereby when the operation is to be stopped the supply of lead may be cut off, and a valve in the middle of the loop whereby when the loop extends downwardly all of the lead contained in said fixed conduit, loop and forming mold may be discharged.

11. A lead mold making device comprising a source of molten-metal or lead supply, a forming mold, a conduit section fixed to said source of supply and extending downwardly therefrom, a pivotally connected pipe connection pivoted between said fixed conduit section and said forming mold, the pipe connection being in the form of a goose-neck loop and when the loop extends downwardly forming a communication from said fixed conduit to said forming mold to permit the lead to flow from said source of supply to said forming mold and when extending upwardly cutting off the passage of lead to said forming mold, a removable connection between said loop and said fixed conduit and forming mold whereby said loop can with facility be removed, the removable connection comprising a semi-circular seat on said fixed connection permitting the free removal of the loop upwardly therefrom, a pivotal block to which the other end of the loop is fixed, and a removable pin for pivotally securing the block to the forming mold.

12. A lead mold making device comprising a source of molten-metal or lead supply, a forming mold, a conduit section fixed to said source of supply and extending downwardly therefrom, a pivotally connected pipe connection pivoted between said fixed conduit section and said forming mold, the pipe connection being in the form of a goose-neck loop and when the loop extends downwardly forming a communication from said fixed conduit to said forming mold to permit the lead to flow from said source of supply to said forming mold and when extending upwardly cutting off the passage of lead to said forming mold, a removable connection between said loop and said fixed conduit and forming mold whereby said loop can with facility be removed, the removable connection comprising a semi-circular seat on said fixed connection permitting the free removal of the loop upwardly therefrom, a pivotal block to which the other end of the loop is fixed, a removable pin for pivotally securing the block to the forming mold, and a spring for maintaining said pin in securing position.

13. A molding device comprising a molten-metal or lead supply-source; a split forming-mold located at a lower level than said supply-source; a closed conduit for conveying the molten metal from the source to the forming-mold, communicating therewith through a sprue at the bottom, such mold being composed of readily heat dissipating metal so that a chill or shell will immediately be formed when the molten metal is introduced into the mold, through contact with the walls thereof, whereupon the still molten metal located in the center of such chill or shell, may be discharged by gravity upon the opening of the sprue-passage.

14. A lead mold making device comprising a source of molten-metal or lead supply, a forming mold at a lower level than said

source of supply, a closed conduit for conveying lead from said source of supply to said forming mold communicating therewith through a sprue at the bottom, said forming mold comprising a fixed section and a movable section both composed of readily heat dissipating metal so that a chill will immediately be formed when the lead comes in contact with the walls of the sections and the remaining lead be discharged to leave a shell mold.

15. A lead mold making device comprising a source of molten-metal or lead supply, a forming mold at a lower level than said source of supply, a closed conduit for conveying lead from said source of supply to said forming mold communicating therewith through a sprue at the bottom, said forming mold comprising a fixed section and a movable section composed of cast iron of great thickness so that a chill will immediately be formed when the lead comes in contact with the walls of the sections and the remaining lead be discharged and leave a shell, the cast iron rapidly dissipating the heat to leave the sections in effective condition for the next operation.

16. A lead mold making device comprising a source of molten-metal or lead supply, a forming mold at a lower level than said source of supply, a closed conduit for conveying lead from said source of supply to said forming mold communicating therewith through a sprue at the bottom, there being a riser opening at the top of said forming mold to indicate to the operator when the said mold is full, and means for cutting off the passage to said forming mold when the same is full.

17. A lead mold making device comprising a source of molten-metal or lead supply, a forming mold at a lower level than said source of supply, a closed conduit for conveying lead from said source of supply to said forming mold communicating therewith through a sprue at the bottom, said forming mold comprising a fixed section and a movable section, parallel extensions on said fixed section between which the movable section is guided, and means for actuating said movable section when desired.

18. A lead mold making device comprising a source of molten-metal or lead supply, a forming mold at a lower level than said source of supply, a closed conduit for conveying lead from said source of supply to said forming mold communicating therewith through a sprue at the bottom, said forming mold comprising a fixed section and a movable section having mold depressions cooperating with one another to produce the form desired, parallel extensions on said fixed section between which the movable section is guided, a cross piece on said extensions, a screw secured to said movable section and coöperating with said cross piece to control the position of said movable section, and a crank for actuating said screw thereby to remove said movable section.

19. A molding device comprising a melting-pot, a forming-mold located at a lower level than the melting-pot; a substantially vertical closed fixed conduit-section in communication with the melting-pot, and extending downwardly therefrom; a pivoted pipe-connection pivoted between the fixed conduit-section and the forming-mold sprue located at the bottom thereof, the pipe connection in one position forming a communication between the fixed-conduit section and the mold-sprue, so as to then permit the molten metal or material to flow from the melting-pot to such mold, and to enter the same at the bottom; and in another position to cut off the flow to the sprue, and at the same time to open the sprue so as to allow the still fluid metal or material in the center of the body being formed to flow by gravity out from the sprue.

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Witnesses:
GUSTAV DREWS,
H. D. PENNEY.