

A. G. STEVENSON.
 VARIABLE LINER FOR LINE CASTING MOLDS.
 APPLICATION FILED OCT. 2, 1911.

1,062,616.

Patented May 27, 1913.

2 SHEETS—SHEET 1.

FIG. 1

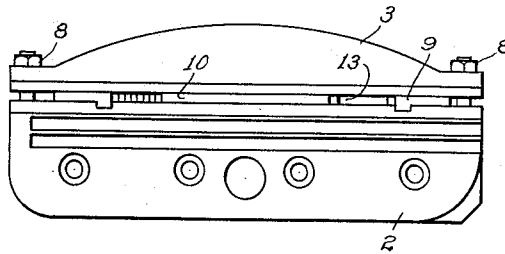


FIG. 2

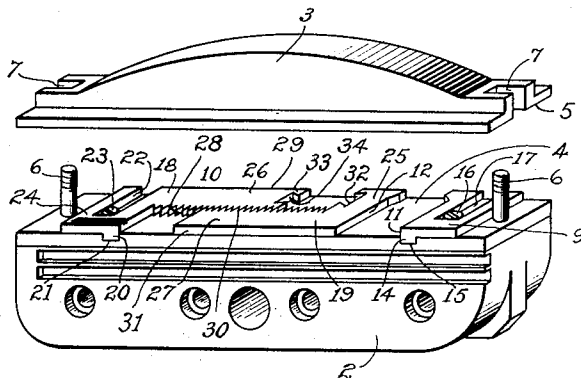
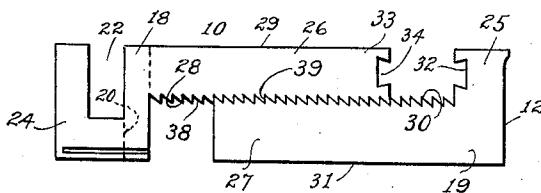


FIG. 3



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INVENTOR

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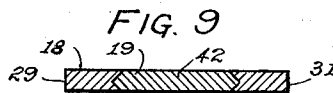
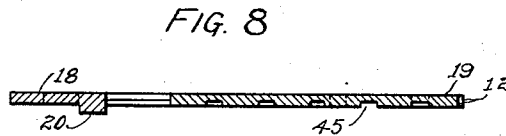
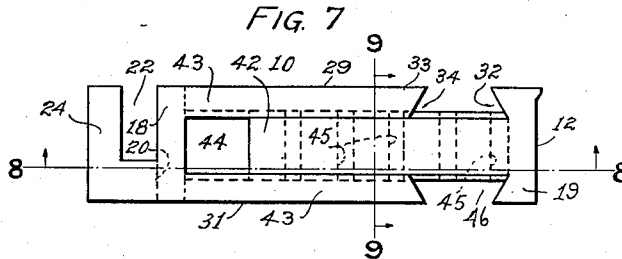
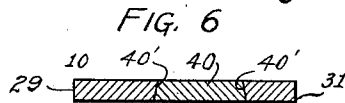
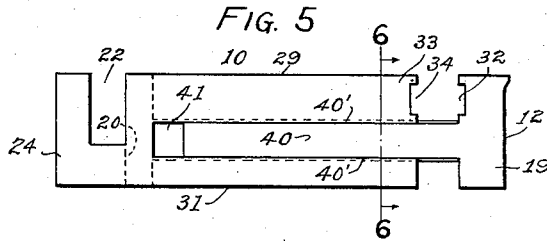
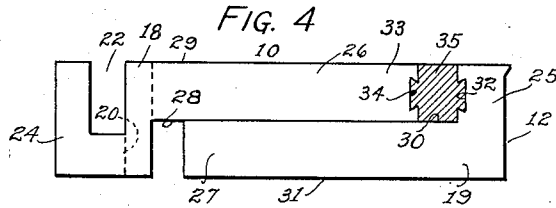
ATTORNEY

A. G. STEVENSON.
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2 SHEETS—SHEET 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ASHTON G. STEVENSON, OF CHICAGO, ILLINOIS.

VARIABLE LINER FOR LINE-CASTING MOLDS.

1,062,616.

Specification of Letters Patent.

Patented May 27, 1913.

Application filed October 2, 1911. Serial No. 652,348.

To all whom it may concern:

Be it known that I, ASHTON G. STEVENSON, a citizen of the United States, and resident of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Variable Liners for Line-Casting Molds, of which the following is a full, true, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in molds for use in casting metallic bars and has particular reference to liners for the molds of printers' line casting machines.

Generally the object of my invention is to provide a variable liner for use in line casting molds such as are commonly employed in linotype and similar machines for determining the length and thickness of the slug.

A further object of my invention is to provide a two-part liner for determining the length of the slug cast in line molds and for similar purposes, which shall be adjustable in length to many sizes from the minimum to the maximum; which shall be of such form that it can be readily and accurately placed in position between the parts of the mold, and which shall be of relatively low cost.

A further object of my invention is to provide a two-part liner for the purpose mentioned, one part of which shall be alined by and with the other part and the two parts of which shall be formed to be interlocked or bound together by means of a soft or type metal member or cast part.

My invention consists in a linotype or similar mold provided with an adjustable liner by means of which the above objects are attained, together with others which will appear herein, and all as hereinafter fully described and particularly pointed out in the appended claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which:

Figure 1 is a front elevation of a slug mold, such as is commonly used in linotype machines, equipped with an adjustable liner

and the whole embodying my invention; Fig. 2 is a perspective view of the mold shown in Fig. 1, the cap being raised from the base to expose the liner to view; Fig. 3 is a top plan view of the adjustable liner; Fig. 4 is a view similar to Fig. 3 showing a modified form of the invention; Fig. 5 is a similar view showing another modified form of the invention; Fig. 6 is a transverse section on the line 6—6 of Fig. 5; Fig. 7 is a view similar to Fig. 3 showing a further modified form of the invention; Fig. 8 is a longitudinal sectional view of the liner illustrated in Fig. 7 on the line 8—8 thereof; and Fig. 9 is a transverse section taken on line 9—9 of Fig. 7.

A slug forming mold, as used in linotype and similar machines, comprises a base member 2, and a cap member 3 having substantially parallel opposed mold faces 4 and 5 respectively. These two parts when in place in the slug casting machine are pressed firmly together in their relative positions, as shown in Fig. 1, by some suitable clamping means, but in the drawings I have chosen to illustrate the two parts as being held clamped together by means of stud bolts 6 which rise from the opposite ends of the base projecting through slots 7 in the ends of the cap and having nuts 8 on their upper ends by means of which the cap is clamped in place. I hold the cap member above the base member a sufficient distance to produce a slug of the desired thickness by means of liners which I interpose between the two members. These liners comprise a stationary non-adjustable member 9 arranged at one end of the mold and an adjustable liner arranged at the other end of the mold. These liners are provided with opposed faces 11 and 12 respectively to form the ends of the slug slot 13. In setting up the mold for casting slugs it is necessary to make the slug slot of the proper length and height to produce a slug of the desired dimensions. The height of the slot is regulated by the thickness of the liners, different pairs or sets of liners being used for producing slugs of the different thicknesses. It is a common practice to use a liner of a fixed length at one end of the

slot and to use liners of various lengths at the other end of the slot for the production of slugs of different lengths. By the use of my adjustable liner, however, I can adjust the position of one end of the slot to produce slugs of many different lengths by the use of the one set of liners. In placing liners in position in the mold it is necessary that they be placed in proper alinement with the edges of the mold faces so that the various devices with which the mold operates in the production of slugs will cooperate therewith properly and without damage to themselves or the mold. The liner 9 is thus properly positioned by means of the transverse tongue 14 on its lower side, which enters the groove 15 in the base member 2, and the stop pin or post 16 carried by the base which engages the end of the transverse slot 17. The liner 10 comprises a fixed member 18 and the adjustable member 19, and the fixed member 18 is properly positioned within the mold in a manner similar to that in which the liner 9 is positioned, that is to say, it is provided on its under face with a transverse tongue 20 which enters a transverse groove 21 in the base and it is provided with a transverse slot 22, the forward end of which engages with a stop pin or post 23 carried by the base.

In the preferred form of my invention, as illustrated in Figs. 2 and 3, the two members 18 and 19 of the adjustable liner 10 are each what might be termed L shaped in plan view; the base portions 24 and 25 respectively of the two members reaching across the mold and forming the ends of the liner, and the stem portions 26 and 27 respectively thereof overlapping and forming the middle portion of the liner. The two parts are so formed that when the stem 27 of the adjustable part 19 is brought into contact with the stem 26 of the stationary part 18, the adjustable part is properly alined in relation to the parts of the mold. The inner edge 28 of the stem portion 26 of the fixed liner is substantially parallel with the rear edge 29, which coincides with the rear face of the mold. The stem portion 27 of the adjustable portion 19 of the liner 10 is substantially longitudinally parallel and of a width to fill the mold between the forward edge 28 of the fixed portion 18 and the front face of the mold, consequently when the adjustable portion 19 is placed in the mold with its rear edge 30 in contact with the forward edge 28 of the fixed part 18, it is properly alined with the mold and its forward edge 31 coincides with the front face of the mold. As illustrated in Fig. 4 I sometimes make these contacting edges of the two parts smooth or straight and in this instance their function is to properly aline the adjustable portion of the

liner with the mold, and in order to hold the two parts in their proper relative position once they have been placed, I provide the base portion 25 of the adjustable liner with a dove-tailed opening 32 and I provide the opposed end 33 of the fixed part 18 with a similar dove-tailed opening 34. The space between these two portions of the liner 10, together with the dove-tailed openings 32 and 34 is filled with molten metal the first time that the mold is used for casting a slug. This metal solidifies forming a spacer 35 which serves to retain the two members in proper relation to each other, it being understood that the two liners 9 and 10 are firmly clamped between the base and cap before a cast is made. The inner ends 11 and 12 respectively of the liner form the ends of the slug slot and the position of the end 12 determines the length of the slug. In the process of casting slugs, by means of the mold, more or less pressure is exerted which tends to force the adjustable portion 19 of the liner 10 backward or away from the fixed liner 9 and so destroy the accuracy of its adjustment. This retrograde movement is opposed and prevented by the soft metal spacer 35 under ordinary circumstances, but I prefer to so form the contacting edges of the two parts of the adjustable liner 10 as to increase the resistance of the adjustable portion 19 to this movement. As shown in Figs. 2 and 3, I provide contacting edges of the parts 18 and 19 with what might be termed "complementary" ratchet teeth 38 which present a plurality of shoulders 39 which oppose the pressure that tends to move the adjustable part 19 longitudinally in the mold. It will at once be understood that these teeth may be formed of many different shapes without departing from the spirit of my invention, provided the general line of the contacting surfaces of the two parts are maintained parallel with the front and rear faces of the mold so that the adjustable portion 19 will be properly alined and positioned in the mold when placed at different points to produce slugs of different lengths. It will now be seen that the adjustable part 19 can be moved out of contact with the stationary part 18 by a very slight movement to the front of the mold and when it is freed from the fixed part 18 it can be moved longitudinally in the mold to adjust the distance between the end surfaces 11 and 12 of the two liners, and to accomplish this movement of the adjustable part 19 it is only necessary to loosen the cap 3 of the mold very slightly, simply enough to relieve the portion 19 of pressure. In the preferred form of my invention, it will be seen that the complementary interfitting edges of the two members accomplish the two functions of alining the

adjustable member and definitely resisting the pressure which tends to move it out of its desired position. A further advantage of this form of liner is that the teeth 38 can be made of such dimensions that the various adjustments of the member 19 will produce slugs of certain definite lengths, the lengths of these slugs being those which are commonly used in the printing art. I provide this preferred form of liner with the dovetailed openings 32 and 34 similar to those described and which perform the same function. When placing the liners in the mold the cap is raised sufficient to permit the parts 9 and 18 to be slid horizontally into place between the opposed faces of the mold, the cap being only raised sufficiently above the base to allow these parts to be freely moved between the opposed faces to this position, then the adjustable part 19 of the liner 10 can be freely moved horizontally between the faces to adjust the length of the slug slot.

In the preferred form of the invention the part 19 can be moved forward sufficient to disengage the opposed teeth on the members 18 and 19 and then it can be freely moved horizontally from and toward the fixed liner 9. In the forms of the invention illustrated in Figs. 4, 5, and 7 the adjustable parts can be freely moved from and toward the fixed liner 9 without a preliminary transverse movement as there are no opposed teeth in these forms to be disengaged.

The two parts of the adjustable liner having been placed in their desired position to produce a slug of the proper length and the cap member of the mold having been clamped upon the liner by the clamping devices and a cast having been made, the two parts are thereafter held definitely in their adjusted position by the spacer 35 which is cast within the space between the fixed and adjustable parts of the liner 10 at the time the first slug is cast.

In the form of the invention illustrated in Fig. 5, the stem portion 40 of the adjustable part 19 is received within a longitudinal slot 41 in the fixed part 18. The particular advantage of this form of liner is that the adjustable part 19 is always maintained in alinement with the fixed member 18 and can be freely moved longitudinally to adjust the length of the mold slot. I sometimes prefer to make the recesses 32 and 34 with parallel instead of flaring side walls so that the two parts of the liner can be freely separated and I have illustrated this form in Figs. 5 and 6. I sometimes prefer to hold the two parts of the adjustable liner together by means of frictional engagement and the forms of the invention illustrated in Figs. 5 and 7 illustrate different methods by which

this frictional engagement may be produced. In these forms the fixed member 18 is provided with a longitudinal slot 41 to receive the stem 40 of the adjustable member 19 and the portions forming the lateral walls of this slot may be sprung together slightly before the stem is entered between them so that when the stem is in place it will be retained by a slight spring pressure. In the form of the invention illustrated in Fig. 5 I make the contacting surfaces 40' between the stem 40 of the member 19 and the walls of the slot 41 slightly inclined vertically toward each other so that the stem can be freely entered into the slot from the lower side springing the walls of the slot apart as it is forced into its proper position. The form of the invention illustrated in Figs. 7, 8 and 9 has the peculiar advantage that the movable member 9 is in a sense telescopically mounted upon the member 18 and the two parts are therefore less liable to become separated from each other when not in the mold. In this form the stem portion 42 of the movable part 19 is V-shaped on its lateral edges and the body portion 43 of the fixed part 18 is provided with a longitudinal groove 44 having longitudinal V-grooves to receive the V-shaped edges of the stem 42.

In the form illustrated in Figs. 7, 8 and 9 the stem 42 of the adjustable part 19 is provided on its under side with transverse grooves 45 for the purpose of allowing the molten type metal to fill in the space 46 at the front edge of the liner as well as the space at the rear edge, to form an additional spacer similar to the soft metal spacer 35. The two spacers are united together by the type metal which fills the grooves 45.

As many modifications of my invention will readily suggest themselves to one skilled in the art, I do not limit my invention to the specific structures herein illustrated and described.

Having thus fully described my invention I claim as new and desire to secure by Letters Patent:—

1. A slug mold comprising a base and a cap having substantially parallel opposed mold faces in combination with a fixed and a variable liner interposed between said faces and holding said parts spaced apart, said variable liner comprising a fixed and a movable part, said movable part being alined by and with the fixed part and being adjustable thereon longitudinally, and freely separable transversely therefrom without the removal of said parts from the mold, substantially as described.

2. A slug mold comprising a base and a cap having substantially parallel opposed mold faces in combination with a fixed and a variable liner interposed between said

faces and holding said parts separated, said variable liner comprising a fixed part and a part adjustable in relation thereto, said adjustable part being freely movable transversely and longitudinally between the mold faces to adjust the length of the slug spaces, substantially as described.

3. A slug mold comprising a base and a cap having substantially parallel opposed mold faces in combination with a fixed and a variable liner interposed between said faces and holding said parts separated, said variable liner comprising a fixed part and a part adjustable in relation thereto, said adjustable part being freely movable transversely and longitudinally between the mold faces to adjust the length of the slug space, said adjustable part being movable to adjust the length of the liner without raising the cap of the mold, substantially as described.

4. A variable liner for printers' line casting molds comprising a fixed section and a movable section, the movable section being adjustable upon the fixed section longitudinally of the mold and being separable transversely therefrom while clamped within the mold, substantially as described.

5. A variable liner for printers' line casting molds, comprising a stationary member and a movable member, said members having contacting edges by which the movable member is alined with the stationary member and with the mold, and said movable member having a portion lying in front of said fixed member and being freely separable transversely in the plane of the liner from the fixed member, substantially as described.

6. A variable liner for printers' slug casting molds comprising a fixed part and a longitudinally adjustable part, said movable part forming one end of the slug casting space and being longitudinally adjustable upon the fixed part, said parts being separable transversely while clamped within the mold and provided on their contacting portions with complementary interfitting projections, substantially as described.

7. An adjustable liner for printers' slug casting molds, comprising a fixed member and a movable member longitudinally adjustable back and forth thereon to form slug spaces of different lengths, the contacting portions of said members being provided with complementary interfitting projections having shoulders preventing retrograde movement of the movable member, said projections being formed to permit the movable member to be separated from the fixed member in the plane of the parts.

8. An adjustable liner for printers' line casting molds, comprising a stationary part and a movable part longitudinally adjustable thereon to form slug spaces of different

lengths, said parts having contacting shoulders substantially at right angles to the longitudinal movement of the adjustable part which prevent the free longitudinal movement of said adjustable part upon the fixed part and permit the transverse separation of the two parts within the mold, substantially as described.

9. An adjustable liner for slug casting molds comprising a fixed part and a movable part freely separable transversely therefrom and longitudinally adjustable thereon, the contacting edges of said two parts being provided with interfitting teeth adapted when engaged to prevent longitudinal movement of the adjustable part, while permitting transverse separation thereof in the plane of the parts, substantially as described.

10. A liner for one end of a linotype slug casting mold comprising a fixed and a movable part having longitudinally overlapping and interlocking portions, the movable part being freely movable transversely in the plane of the liner without the removal of the liner from the mold, for separating the movable part from the fixed part to permit the longitudinal adjustment of the movable part to form slug spaces of different lengths, substantially as described.

11. An adjustable liner for linotype slug molds comprising a fixed and a movable part of substantially equal thickness formed to interlock with each other to prevent longitudinal movement of the movable part, said movable part being freely separable transversely from the fixed part in the plane of the liner, substantially as described.

12. A two-part liner for printers' slug casting molds comprising a fixed member and a member longitudinally movable thereon and freely separable transversely therefrom in the plane thereof for preliminarily adjusting the length of the liner and to prevent damage to the liner and associated parts when excessive pressure is applied to the movable member from the rear, and a removable soft metal spacer having interlocking engagement with both said members, substantially as described.

13. A variable liner for printers' slug casting molds comprising a fixed part and an adjustable part having longitudinally overlapping portions, means for holding said adjustable part longitudinally relatively to the fixed part and said adjustable part being free to be separated from the fixed part while the liner is held within the mold.

14. A variable liner for printers' slug casting molds comprising a fixed part and an adjustable part having longitudinally overlapping contacting portions, means preventing a retrograde movement of said adjustable part, and said adjustable part being separable transversely of the mold from the

fixed part without removing the liner from the mold.

15. A movable liner for printers' slug casting molds comprising a fixed part and an adjustable part, said parts having longitudinally overlapping contracting portions whereby said adjustable part is alined by and with said fixed part, said adjustable part being separable forwardly from said fixed part without removing said fixed part from the mold.

16. A slug mold having a base and a cap and means for clamping them together, in combination with a fixed and an adjustable liner interposed between the adjacent faces of said mold parts clamped between and maintaining said parts in spaced relation to form a slug space, said adjustable liner comprising a fixed part and a movable part, the fixed part being held in fixed relation to the parts of the mold and provided with a shank thereon which projects toward the fixed liner and between the two parts of the mold, said extension being narrower than the depth of the mold and having its forward edge arranged substantially parallel with and spaced back from the front face of the mold, said movable part having a portion adapted to form one end of the slug slot and which is arranged with its rear end in the plane of the rear face of the mold, and having a tail portion which extends in a direction away from said fixed liner and overlaps the extension of the fixed part of the adjustable liner, said tail portion having its forward edge coincident with the forward face of the mold, the overlapped portions of the two extensions having interlocking projections upon their adjacent edges which prevent the free longitudinal movement of the adjustable part between the two parts of the mold and said movable part being free to be moved forwardly away from the fixed part when subjected to excessive pressure from the rear.

17. A slug mold having a base and a cap, in combination with an adjustable liner and a fixed liner arranged between the base and cap adapted to form a slug space, said adjustable liner comprising a fixed part and a movable part which overlap each other, said fixed part having one edge in the plane of the rear face of the mold and the movable part having one edge in the plane of the front face of the mold, a slug end forming portion on said movable part extending from face to face of the mold, the overlapped portions having inter-fitting projections on their contiguous edges which serve to retain the movable part longitudinally immovable while permitting said movable part to be forced away from the fixed part by pressure upon its rear edge.

18. A type-slug forming mold compris-

ing a base and a cap adapted to be adjusted from and toward each other to provide a slug space of the desired depth, in combination with a one-piece liner arranged between the base and cap at one end and a two-piece liner arranged between the base and cap at the other end for maintaining said base and cap in their spaced relation, one part of said two piece liner being fixed between the parts of the mold and having a portion extending longitudinally between the mold faces and having its rear edge in the plane of the rear face of the mold, said other part of said two part liner being relatively movable and having a portion which overlaps the extension of the fixed part and having its front edge in the plane of the front face of the mold and an L-shaped projection on the inner end of said movable part adapted to form one end of the slug slot, said projection extending from face to face of the mold, the overlapped projections of the two parts having complementary interfitting projections which prevent the longitudinal movement of the adjustable part and permit its free movement thereof transversely in the mold.

19. A slug mold comprising a base and a cap having substantially parallel opposed mold faces in combination with a fixed liner arranged at one end and an adjustable liner arranged at the opposite end thereof and adapted to hold said cap and base separated, means for clamping said base and cap together upon said liners, means wholly situated between the planes of the parallel faces of the base and cap adapted to restrain the free longitudinal movement of said movable liner while permitting the forward ejection of said movable liner from the mold by pressure upon the rear edge thereof.

20. A slug mold comprising a base and a cap having substantially parallel opposed mold faces, in combination with a fixed liner arranged at one end and a variable liner arranged at the opposite end, and means for clamping said base and cap upon said liners, said variable liner comprising a fixed part and a part adjustable in relation thereto, means lying wholly within said slug space for holding said movable part in definite relation to said fixed part and said movable part being adapted to be ejected from the front of said mold by pressure upon its rear edge without distortion of the two parts.

21. A slug mold comprising a base and a cap having substantially opposed mold faces, in combination with a fixed and a variable liner interposed between said faces and holding said cap and base separated, said variable liner comprising a fixed and a movable part, said parts having longitu-

dinally overlapping portions provided on
their adjacent edges with complementary
interfitting projections adapting the parts
to be adjusted to a series of definite relative
5 positions resulting in a series of slug spaces
of certain definite relative lengths, and said
movable part being free to be ejected from
between the faces of the mold by pressure
applied to the rear edge thereof without

damage to the mold or the coöperating 10
parts.

In testimony whereof, I have hereunto
set my hand, this 17th day of August, 1911,
in the presence of two subscribing witnesses.

ASHTON G. STEVENSON.

Witnesses:

E. F. WILSON,
JOHN R. LEFEVRE.