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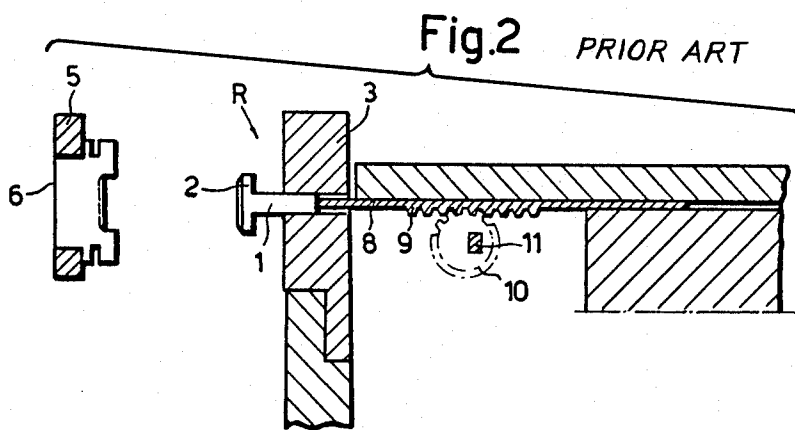
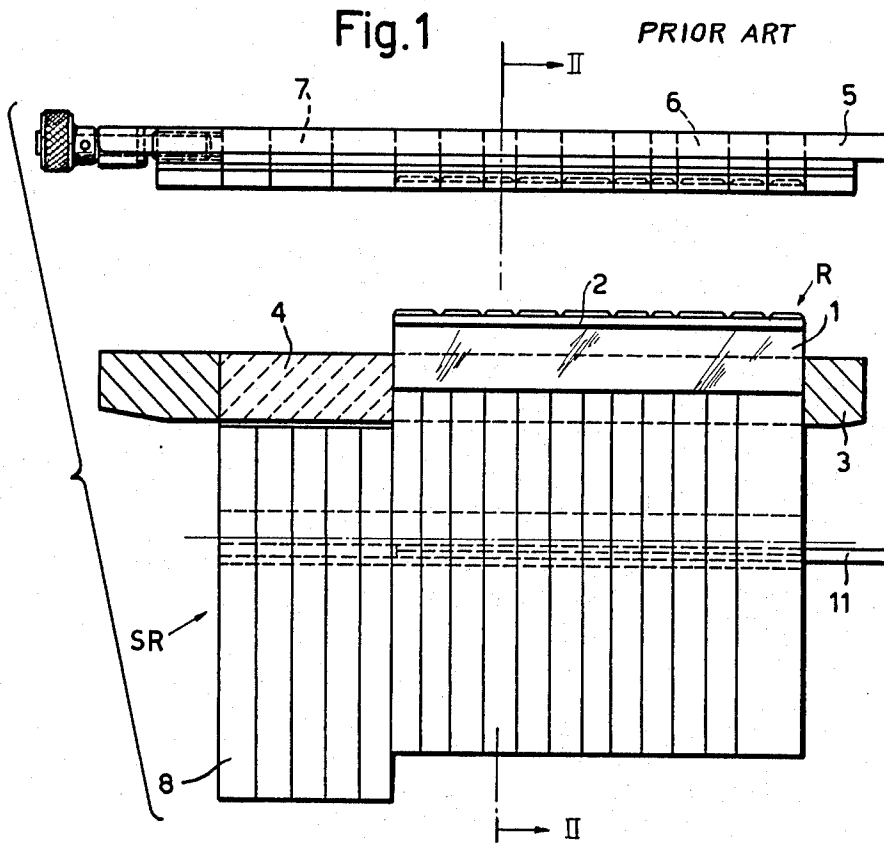
A. CALI'

3,233,723

CASTING PRINTERS' TYPE SLUGS

Filed Dec. 31, 1963

4 Sheets-Sheet 1



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Fig. 3

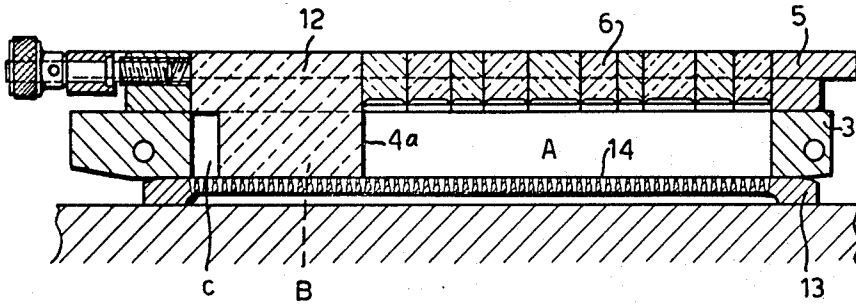
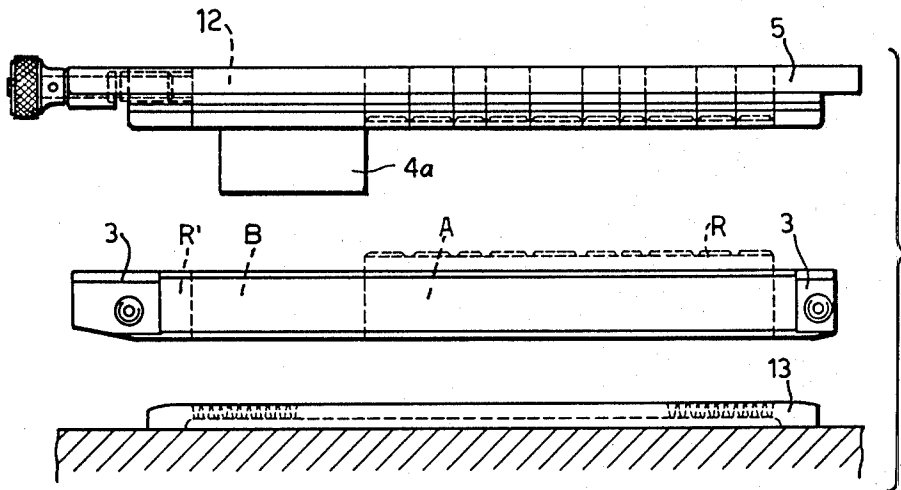


Fig. 4



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Fig. 6

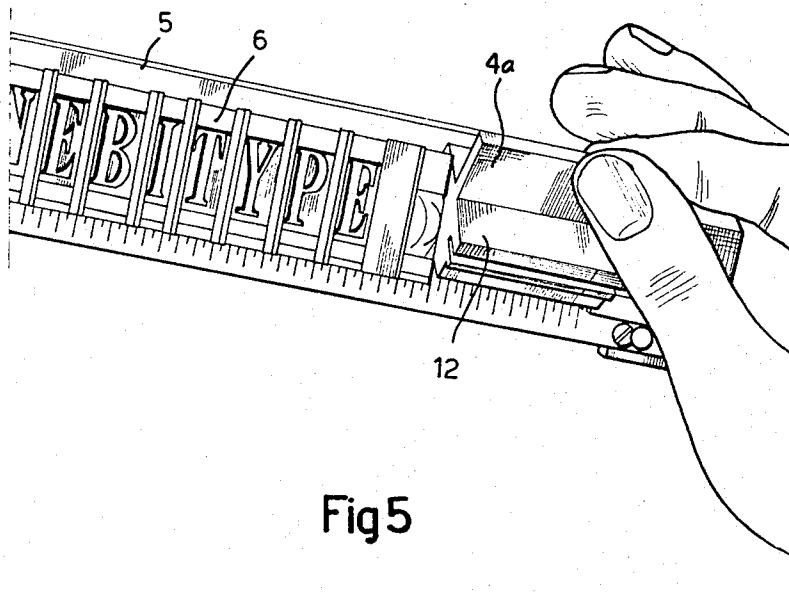
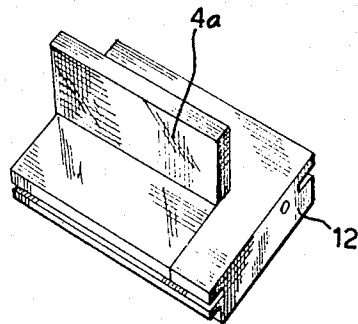


Fig. 5



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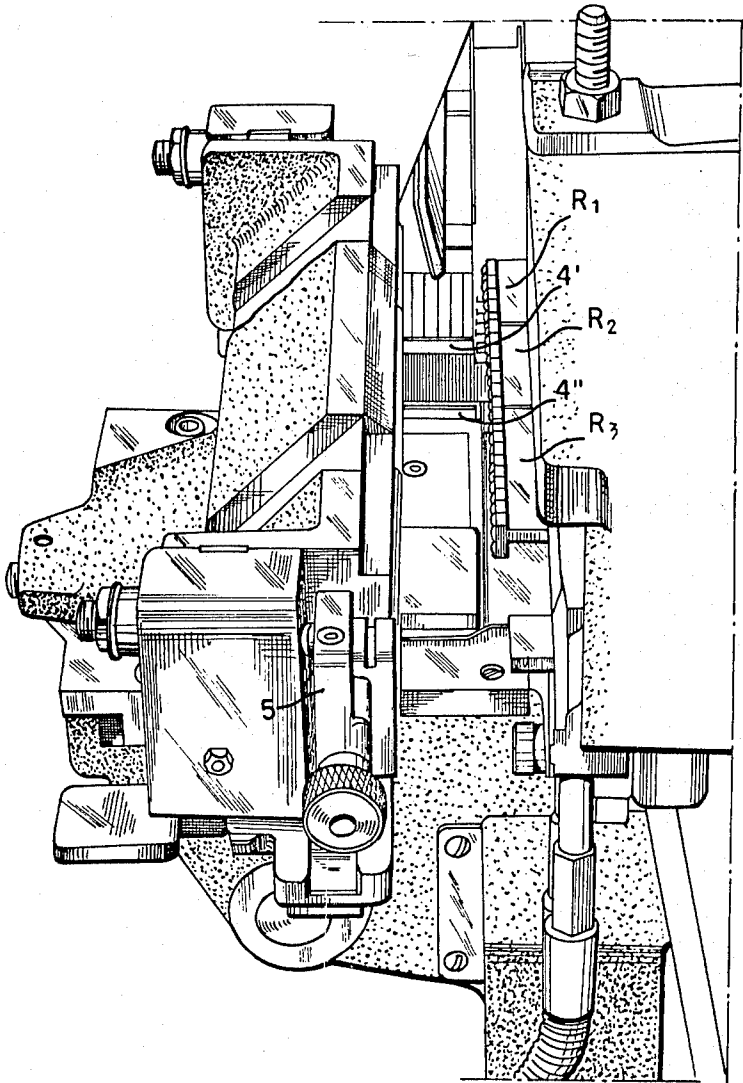
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CASTING PRINTERS' TYPE SLUGS

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Fig.7



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CASTING PRINTERS' TYPE SLUGS

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Claims priority, application Italy, Jan. 8, 1963,
782/63

3 Claims. (Cl. 199—1)

This invention relates to a method of casting type slugs bearing lines of printing characters of any desired length or measure on manual and mechanical composing machines of the type in which the lines are cast in chill molds comprising a mold having a through cavity for the line shoulder and matrices carried by a matrix-holder closing the mold on one side, by drawing the mold and matrices therefor towards an injection mouth fed with a molten lead alloy under pressure, the line-slugs being expelled from the mold upon removal of the latter from the injection hole and matrices by means of a line push blade entering the mold cavity.

It is known that line-slug casting machines of the type referred to above mostly cast line-slugs of a fixed length. When line-slugs of a length other than the length obtainable on the casting machine are desired, it becomes necessary to remove from the previously cast line a part thereof, more particularly the part formed at the region of the matrix-holder at which blank matrices have been inserted instead of type matrices.

It is further known that in order to cast line-slugs of a desired length on casting machines adapted to cast line-slugs of a fixed length, variable length lugs have been placed into the mold to prevent filling part of the mold with the molten lead alloy, whereby line-slugs varying in length according to the length of the lugs are obtained.

This known prior process dispenses with cutting previously cast line-slugs, but necessitates stoppage of the machine over a certain period whenever casting of lines of a given length has to be switched over to casting of lines of a different length. This requirement, the reasons for which shall be explained hereafter, in practice prevents simultaneous use of one and the same casting machine by a number of operators each having a special setting program.

The prior method just described is further objectionable in that limits are imposed on the choice of the lengths of line-slugs to be cast.

This invention provides a method fully obviating the above drawbacks and enables line-slugs of any desired length to be cast on a manual or mechanical composing machine adapted to cast line-slugs of a fixed length.

A further object of the invention is to provide a method which is easily carried out without requiring any modification of the main parts of existing line-slug casting machines.

With these objects in view the invention provides a method of casting line-slugs of any desired length smaller than the maximum length obtainable on a machine of the type including an injection mouth, mold and matrix-holder all of a predetermined size, by which method the mold cavity is totally filled at least over a section of its length by a separately attached lug supported together with the matrices by the matrix-holder.

Further characteristic features and advantages of this

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invention shall be described with reference to the accompanying drawings, wherein:

FIGURE 1 is a somewhat schematic plan view showing a matrix holder, mold, line pushing blade and a line-slug during stripping of the line-slug cast by a known prior art method from the mold;

FIGURE 2 is a sectional view taken on line II—II of FIGURE 1;

FIGURE 3 is a longitudinal sectional view through a section of a line-slug casting machine comprising a matrix holder, mold and injection nozzle for the lead alloy in their mutual position directly preceding casting of a line-slug by the method according to this invention.

FIGURE 4 is an exploded plan view partly in section of the components of the casting machine shown in FIGURE 3 drawn apart from one another;

FIGURE 5 is a perspective view of a lug adapted to be supported by the matrix holder to obstruct or fill a desired part length of the mold;

FIGURE 6 is a perspective view of a matrix holder carrying the matrices receiving the lug;

FIGURE 7 is a perspective view of the section of the casting machine in which the injection mouth, mold and matrix holder are arranged.

Corresponding parts are provided with the same reference numerals throughout the drawings.

A known prior art method will first of all be described. This includes casting on one and the same casting machine line-slugs of a size variable at will in accordance with composition requirements.

For this purpose FIGURES 1 and 2 show certain essential characteristic components of a casting machine in their mutual position during stripping of a cast line-slug.

The line R, which is composed of a shoulder 1 and slug head line forming part 2 is shown in a position in which the shoulder 1 is partly driven out of the mold 3, the mold cavity being obstructed in part by a lug 4 which has prevented filling of the whole recess in the mold 3 during casting by molten lead from an inlet opening (not shown), whereby a line equal in length to the inner recess in the mold 3 has been cast.

A case or matrix holder 5 acts as a holder for matrices 6 arranged in front of the part of the cavity in the mold 3 in which the shoulder 1 of the line has been cast, and blank matrices 7 are positioned in front of the lug 4.

The matrix holder with the matrices 6 and blank matrices 7 is shown removed from the mold 3 to permit the necessary displacement of the line R for releasing the shoulder 1 from the mold 3. The line R is stripped from the mold 3 by the action on the shoulder 1 of the line by the stripping member SR. As distinct from conventional casting machines for type slugs of a fixed size employing a blade matching in length the cavity in the mold 3, the stripping member SR is made up of a plurality of adjacent thin blades 8, each thin blade being adapted to enter the cavity in the mold 3 and carrying thereon a rack 9 meshing with a gear 10 carried by a supporting shaft and a keying member 11.

By displacing the member 11 the blades can be pushed into the cavity in the mold 3 to drive out the line-slug the shoulder of which has been cast in the mold. The structure is such that only part of the blades 8 can be pushed in the direction of the mold 3, the remaining blades being

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maintained in an inoperative position as shown in the bottom left portion of FIGURE 1, in accordance with the length of the lug 4 fitted into the recess in the mold 3.

By the above described method and arrangement variable measure line-slugs can be cast on the same machine, without any change to the essential machine parts, namely, mold, matrix holder and injection mouth. The line push member only need be modified. The purpose in view is fulfilled by fitting into the cavity in the mold variable measure lugs selected to match the desired line size.

As mentioned above the above described prior method is objectionable in many respects.

Firstly, the casting of a line-slug of a desired size other than the size for which the casting machine is designed, necessitates preliminary steps preparatory to actual line-slug casting.

These steps comprise fitting of lugs 4 into the recess in the mold 3 and adjustment in length of the line push member SR by arranging for part of the blades 8 to move forward on stripping of the line-slug from the mold 3. These steps mean a loss of time to the composer attending to the machine and are the cause of the so-called idle periods of the machine. Considering that a number of composers currently work on one and the same machine, each operator attending to a special composing program, it will be obvious that operations carried out by one composer on the machine interfere with the work by other composers, whose setting requirements may be different. The next composer, who is required to cast a line of a different size, shall be bound to perform the same preliminary operations as the preceding composer.

A further drawback resides in the impossibility of casting a line of a desired length without any limit of any kind. This would require in practice the holding on stock of endless lugs 4; the width of the blades 8 of the line push member should be extremely small, nay, infinitesimal, but constructional reasons do not admit of a width smaller than, for instance, number 2CIC or number EMS (1CIC=4.52 mm., 1EMS=4.22 mm.).

Assuming an extremely large number of lugs 4 is available, if the line is of such length that its edge adjacent the lug 4 ends intermediate two blades 8, the line push member would always be shorter than the line and would be incapable of stripping the line from the mold 3 satisfactorily.

Assuming by way of example the line push member comprises a first element number 4CIC and all remaining elements number 2CIC each, it would be possible to cast on the machine line-slugs of sizes differing from the largest possible measure 4CIC, 6CIC, 8CIC, 10CIC, etc., while it would be impossible to cast lines smaller in measure than the maximum measure 5CIC, 7CIC, 9CIC, etc., 5.5CIC, 6.5CIC, 8.5CIC, etc.

The above drawbacks are avoided by this invention, which provides a method comprising the step of fitting into part of the cavity in mold 3 a lug 4a, FIGURE 5 in the form of an extension on a blank matrix 12 arranged beside the matrices 5 provided with the engravings in the holder.

As the mold 3 is removed from the injection mouth 13 formed with a plurality of injection holes 14 and the other side of the mold is closed by the matrices 6 and 12 carried by the matrix holder 5, as shown in FIGURE 3, the lug 4a which fully matches the shoulder of the cast line slug obstructs the cavity in the mold 3 at the desired region intercepting flow of the lead alloy to this region. A line slug of the desired measure therefore results from casting.

After casting of the type line the block comprising the lug 4a and blank matrix 12 having the lug as an extension thereon, is removed from the mold 3 together with the matrix holder 5, as shown in FIGURE 4, and after removing the mold from the injection mouth 13 the line slug R can be stripped from the mold 3 by a conventional line

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push blade made of one piece having a dimension equal the length of the cavity in the mold 3.

The above method and arrangement simplify operations preparatory to casting a line-slug of the desired measure and affords the following advantages over the prior art:

No operation need be effected on the machine either before or after casting. All operations are performed on the matrix holder and are purely composition work. The composer would compose the inscription of the desired measure in the usual manner and close the composition by the block formed by the blank matrix carrying the extension 4a. Thereafter casting of the line is effected in the usual manner, the line issuing from the machine being of the desired length. A plurality of operators working on the same casting machine would not interfere with one another, idle time for justifying is thus fully eliminated.

No limits are imposed upon the choice of the length of the line to be cast. This shall be further explained by referring to the representation in FIGURE 3.

It can be seen from FIGURE 3 that the injection mouth 13, mold 3 and matrices 6, 12 accurately contact with one another during casting. Consequently, at the mold region A the lead alloy can be injected to fill the matrices 6 and form the line of the desired measure. Access of lead to the region B in the cavity in the mold 3 is prevented by the lug 4a plugging the holes 14 in the injection mouth 13. No casting is therefore effected at this region.

At region C lead flows into the mold. Owing to the absence of matrices a short blank line shoulder section (no type) is cast.

Subsequent to casting the matrix holder 5 and mold 3 are moved to the position shown in FIGURE 4, the mold incorporating the shoulders of slug R bearing a line of printing characters and the shoulder of the short blank slug section R'. The line push member (not shown) drives the slugs from the mold 3. The short slug section R' cast at region C falls into a waste collecting receptacle.

It will be clear that the line length can be varied at will. By equipping the machine with a set of variable length lugs 4a, 12 such as number 2CIC in order to cover intermediate lug lengths, advantage can be taken of the possibility of moving the blank matrix 12 within the region C to increase the line length, FIGURE 3. Since the region C, FIGURE 3, can be fully covered, any variable length between a lug and the next one can be obtained by selecting a region C equal to the difference in length between a lug 4a, 12 and the next one. It is moreover possible to obtain two or more line-slugs of desired lengths at the same time by one casting operation. By fitting into the same matrix holder two or more lugs 4, 12 the lead flow is intercepted at two or more regions, whereby two or more line-slugs of the desired length are simultaneously obtained.

FIGURE 7 shows three line-slugs R₁, R₂ and R₃ of different measures as they are being stripped from the mold after releasing the latter from the matrix holder carrying thin lugs 4', 4'' by which the mold had been divided into three separate compartments.

What I claim is:

1. A device for blanking out a part of a mold cavity to limit the remainder thereof to a length of a line of type to be cast, said device comprising a first portion having means for mounting said device in a matrix holder adjacent a matrix therein and a second portion having means extending from said first portion for projecting into and completely filling a part of a mold cavity beyond the line of matrices.

2. A device according to claim 1 wherein said mounting means has a length at least equal to the length of the extending means with at least one edge of said extending means aligned with one edge of said mounting means.

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3. A method of casting in a mold line slugs of a desired length less than that of the mold, comprising mounting a plurality of type matrices in a portion of a matrix holder, inserting a device in the remaining portion of the matrix holder, said device having a mounting portion and an extending portion protruding therefrom beyond the matrix faces, bringing together the matrix holder and the mold, inserting the extending portion of said device completely into the line shoulder cavity in the mold, filling the mold with lead, withdrawing the matrix holder and ejecting the line slug from the mold.

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