

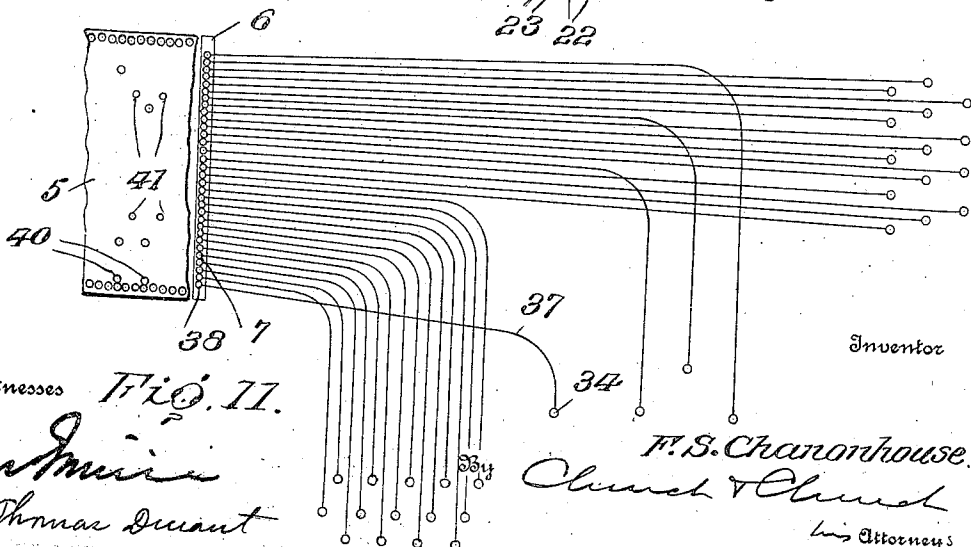
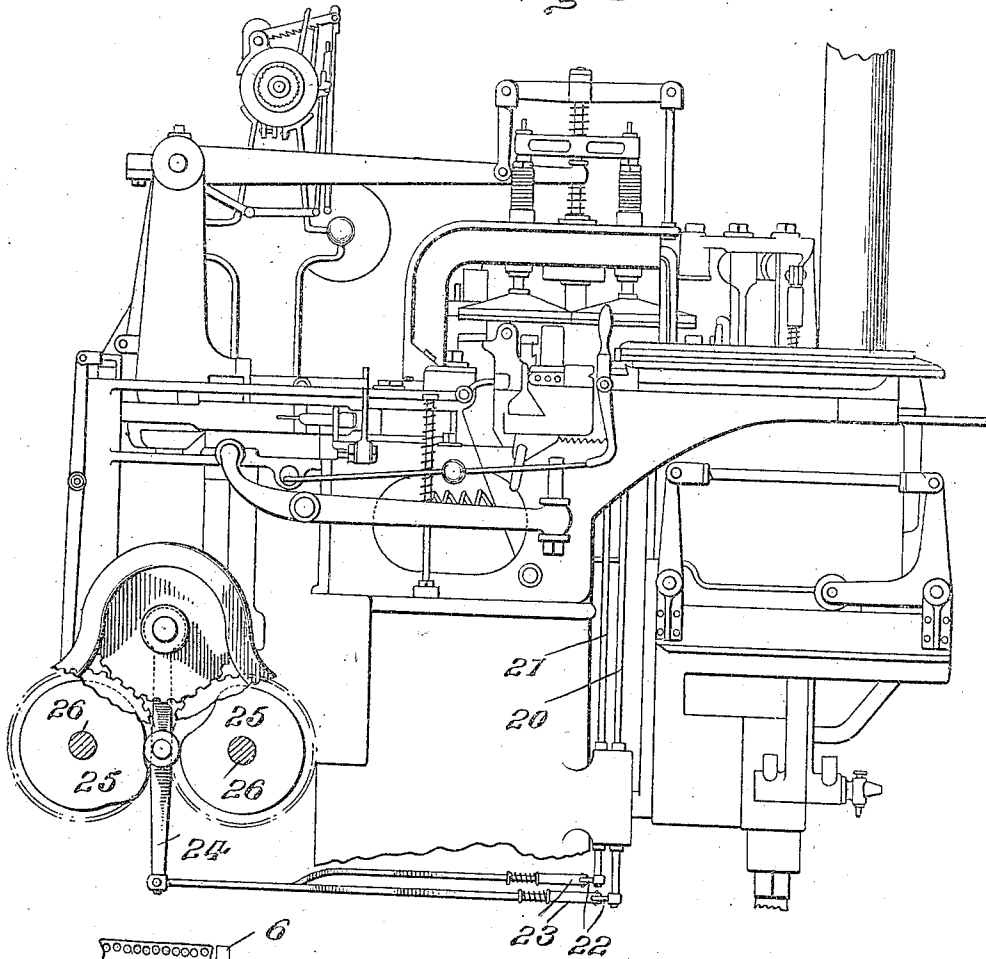
F. S. CHANONHOUSE.
 LOW QUAD MOLD AND ACTUATING MECHANISM THEREFOR.
 APPLICATION FILED JAN. 28, 1909.

952,604.

Patented Mar. 22, 1910.

4 SHEETS—SHEET 1.

Fig. 7.



Witnesses *Fig. 11.*

Thomas Duant

Inventor

F. S. Chanonhouse.
Church & Church
 Attorneys

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4 SHEETS—SHEET 2.

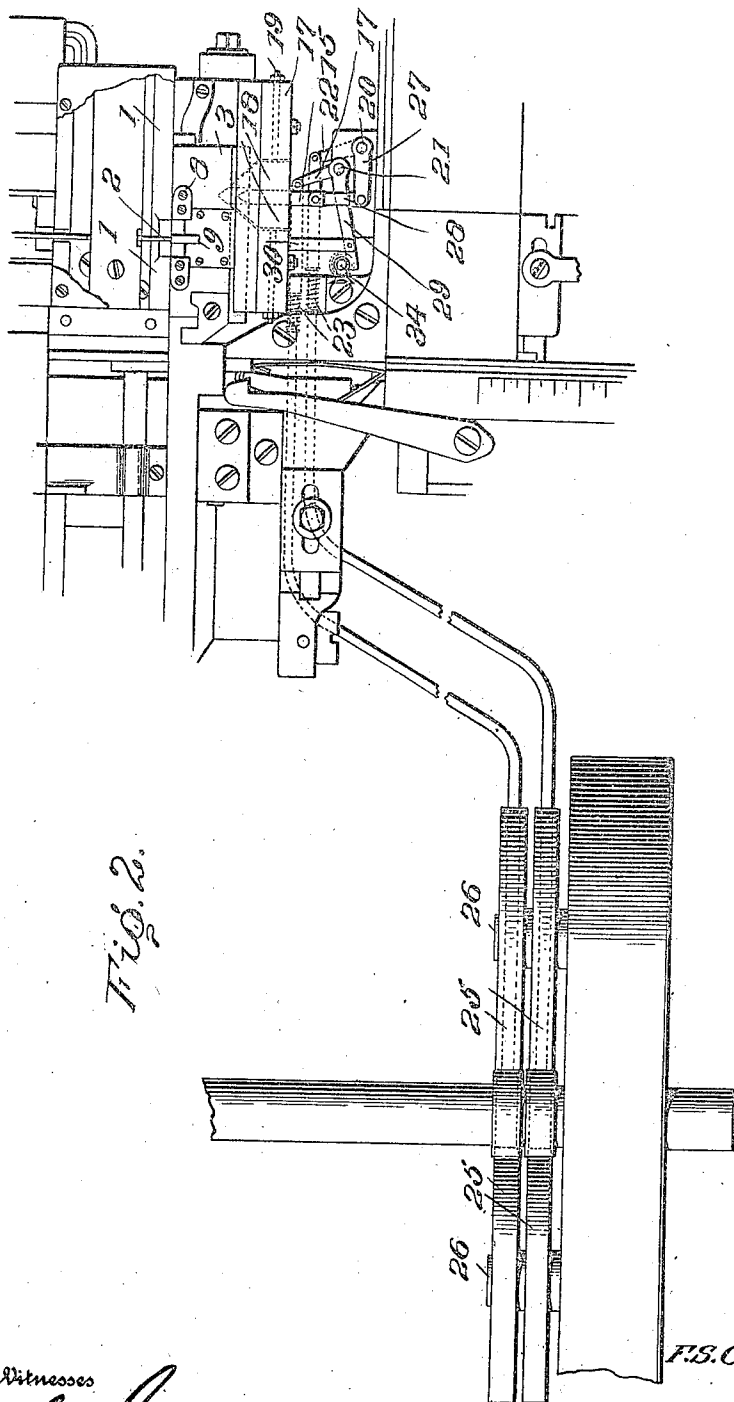


Fig. 2.

Witnesses

Thomas Durant

Inventor

F.S. Chanonhouse

By

Church & Church

Attorneys

F. S. CHANONHOUSE.
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4 SHEETS—SHEET 3.

Fig. 3.

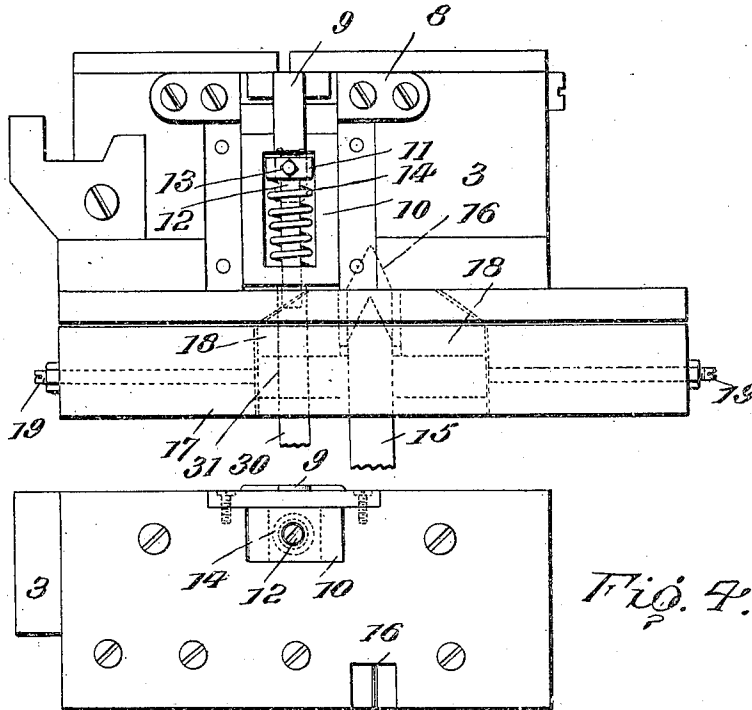


Fig. 4.

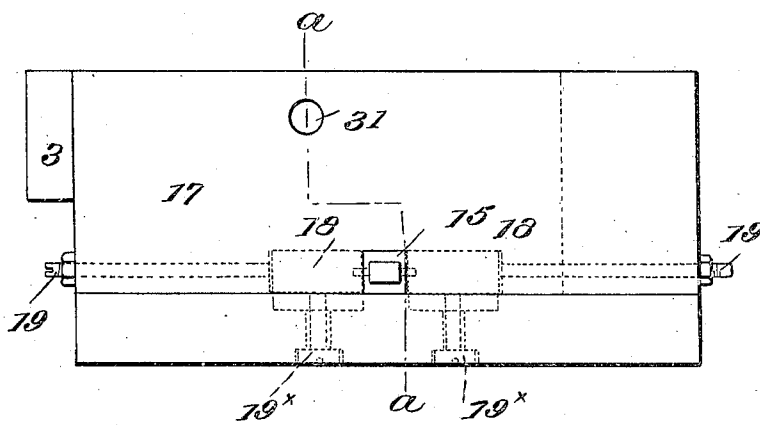


Fig. 5.

Inventor
 F. S. Chanonhouse

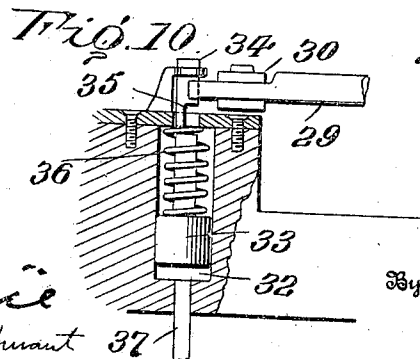
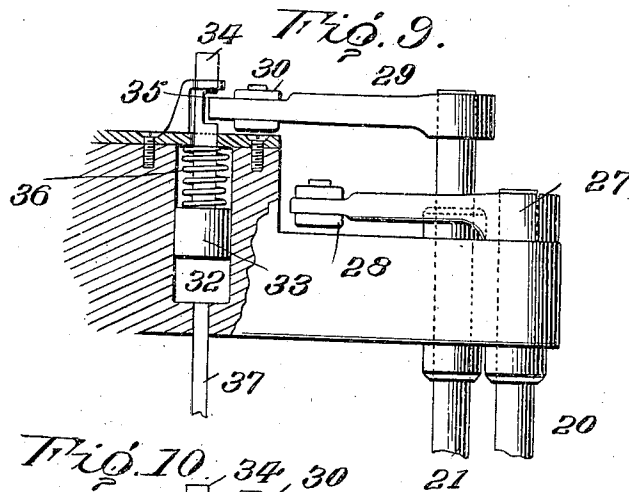
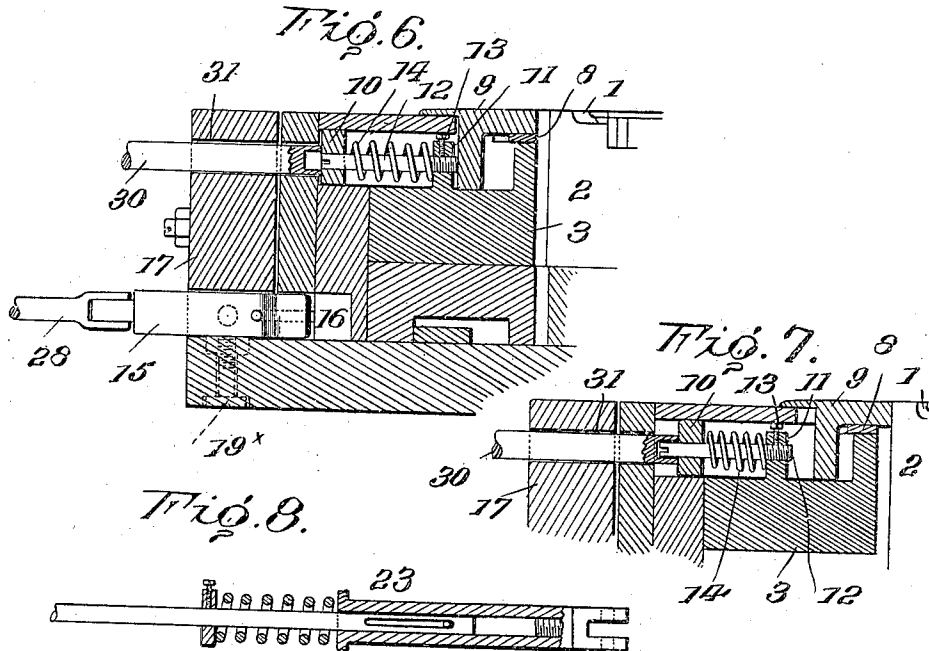
Witnesses
Thomas Durant

By *Church & Church*
 his Attorneys

F. S. CHANONHOUSE.
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 4 SHEETS—SHEET 4.



Witnesses

Thomas Durant

Inventor
 F. S. Chanonhouse

By *Chas. V. Chas.*
 Attorneys

UNITED STATES PATENT OFFICE.

FREDERICK S. CHANONHOUSE, OF EVERETT, MASSACHUSETTS, ASSIGNOR TO LANSTON MONOTYPE MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF VIRGINIA.

LOW-QUAD MOLD AND ACTUATING MECHANISM THEREFOR.

952,604.

Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed January 28, 1909. Serial No. 474,850.

To all whom it may concern:

Be it known that I, FREDERICK S. CHANONHOUSE, of Everett, in the county of Middlesex, Massachusetts, have invented a certain new and useful Improvement in Low-Quad Molds and Actuating Mechanism Therefor; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part thereof, and to the figures of reference marked thereon.

This invention relates, generically, to what are known as low quad type molds, and, specifically, to the class of molds employed in connection with type casting and composing machines wherein successive matrices are applied to one end of the mold cavity and means are provided for varying both the lateral and longitudinal dimensions of said cavity and for withdrawing one of the side walls, to permit the discharge of the type; and said invention consists, broadly, in uniting the cut-off or longitudinal dimensioning member with the cross-block or removable side wall of the mold cavity; in equipping said cross-block or movable side wall with means for insuring registry between the cut-off section and the mold cavity; in utilizing the record strip or pattern for determining variations in the longitudinal dimensions of the mold cavity; and in minor features having relation to the construction, arrangement and combination of parts, all as hereinafter fully described and pointed out in the claims.

In the accompanying drawings illustrating a preferred form of embodiment and adaptation of the present invention—Figure 1 is a front elevation and Fig. 2 a partial top plan view of a type casting machine supplied with the low quad mold equipment. Fig. 3 is a top plan view of the cross-block and a portion of the mold frame, the cover plate being removed to disclose the carrier for the cut-off section. Fig. 4 is a side elevation of the cross-block. Fig. 5 is a front elevation of the mold frame. Fig. 6 is a section on the line *a-a*, Fig. 5. Fig. 7 is a partial vertical section through the cut-off section showing the latter in advanced position. Fig. 8 is a detail sectional view of the elastic or compression coupling. Fig. 9 is a front elevation partly in section of

a portion of the cut-off actuating mechanism showing the controllable stop or latch in open position. Fig. 10 is a detail sectional view showing the latch or stop in normal or engaging position. Fig. 11 is a diagrammatic view of the tracker board and connections for governing the selective members of the type machine, showing the auxiliary port controlling the cut-off section of the cross block, together with a section of the pattern or record strip containing the low quad designating signal or perforation.

Like numerals designate corresponding parts in the several figures.

For purposes of illustration the improvements are shown applied to the type casting and composing machine of Patent No. 625,998, dated May 30, 1899; but it is to be understood that the invention is not limited thereto, as in many of its features it is applicable to most if not all forms of mold employing a movable cross block, or the equivalent thereof, for alternately closing and opening one side of the mold cavity, to permit the ejection of the type therefrom.

As will more fully appear by reference to the aforesaid patent, the mold is equipped with two side blocks 1, spaced to correspond with the "point" dimensions of the type; a mold blade 2 automatically movable to vary the set-wise dimensions of the type and eject the latter; and a cross-block 3 movable transversely of the cavity bounded on three sides by the side blocks and mold blade and forming, when in casting position, the fourth side of said cavity.

The machine is equipped with a series of matrices and means for selectively centering and clamping individual matrices upon the face of the mold to give form to the end or face of the type cast therein, the adjustment of the mold blade and selection of the matrix being governed through the medium of a perforated record strip or pattern co-operating with a tracker bar or board, the latter containing an alined series of parts registering with the signal perforations of the record strip, and transmitting pressure to the various performing mechanisms.

As the matrices seat upon the face of the mold, it is obvious the spaces and quads produced by blank or flat faced matrices, differ in height from the character type by the depth of the matrix cavity only; in other

words, the quads or spaces are shoulder high relative to the character type, which necessitates an unnecessarily deep drive to produce serviceable spaces and quads. The economical limit to which the depth of drive could be carried being insufficient to produce the desired difference in height between the spaces or quads and the character type it has been proposed to divide the mold blade longitudinally into two sections and to project the upper section into the mold cavity, to close the matrix end thereof, when spaces or quads were to be cast. This is known as the low quad mold of which an example is to be found in Patent No. 864,087, of August 20, 1907.

The mold-blade being narrow and performing both the adjusting and ejecting functions of the mold, its division into independently movable sections introduces complications in the matters of expansion, guiding and operating which are in a large measure overcome or avoided by the present invention wherein the integral mold blade and side blocks of the earlier form of mold are retained, and the cut-off is mounted upon and forms part of the cross block 3, as will now be explained.

The removable matrix receiving or seating section 8 of the cross-block is grooved to form a way or guide for the reception of a movable cut-off section or blade 9, the latter of a width corresponding with the point size of the type, and with the interval between side blocks 1, and of a thickness corresponding with the difference between the length of the quad or space and the body of the character type cast in the same mold. The upper face of this movable cut-off section or blade 9 is preferably flush with the top or matrix seating surface of section 8 and when retracted or in normal position for casting full body or character type, its front face stands flush with the side of the cross-block and forms a continuation of the casting face thereof. When projected said cut-off section enters and fills the upper section of the mold cavity, fitting accurately between the opposing faces of the side blocks and contacting with the front face of the mold-blade in any position of adjustment; and it is sustained, if need be, against vertical displacement by the engagement of the superimposed matrix.

In the preferred form of embodiment illustrated the cut-off section 9 is sustained, guided and adjusted by being formed upon or detachably secured to a carrier or frame 10, the latter received in a recess in the cross block in rear of its casting face. The carrier 10 is recessed for the reception of a bearing 11 carried by the cross-block and provided with an adjusting screw 12 one end whereof is exposed on the rear of the cross block and the opposite end impinges against

a bearing on the carrier below and in line with the cut-off section 9. Suitable means, such as a set screw 13, are provided for retaining screw 12 in adjusted position, and a spring 14, interposed between bearing 11 and carrier 10 and held to position by screw 12, serves to hold the carrier under elastic tension in contact with screw 12, to maintain the free end or casting face of cut-off 9 flush with the side face of cross-block 3.

It is required that the cut-off section 9 should make a close fit with the side-blocks when projected into the mold cavity, to prevent the escape of the molten metal and the formation of fins on the type and any displacement of the cross-block due to the wear or spring of its actuating mechanism or resulting from variations in temperature will seriously interfere with the action of the cut-off section by preventing it from entering the mold cavity.

An extreme degree of accuracy is required in positioning the cross-block at the instant the cut-off is advanced for a very slight displacement of the cut-off section will be sufficient to prevent its entrance between the side blocks and the performance of its allotted function, to wit, the reduction of the longitudinal dimensions of the mold cavity when low quads or spaces are desired or called for.

To insure accurate registry between the cut-off blade or section and the side-blocks at the time the advance of the cut-off section is to take place, suitable gaging or registering devices are applied directly to the cross-block. In the example these comprise a wedge shaped plunger 15 and complementary seat 16, the one carried by the cross-block and the other by the mold supporting frame or block 17. In the present instance the V-shaped seat 16 is formed in the rear face of the cross block, and the plunger 15 is mounted upon the mold frame 17, the parts being so related and adjusted that when the plunger is projected and fully seated it will shift the cross block in either direction until the cut-off blade or section is in register with the opening between the side-blocks.

To facilitate initial adjustment plunger 15 is guided laterally between two blocks or bearings 18 guided in a seat or opening in the mold frame 17 to move longitudinally of cross block 3, and each of said blocks is provided with an adjusting screw 19 and a clamping screw 19*.

The operation of the parts thus far described is obvious: The cut-off blade or section 9 is retained in retracted position so long as character or full body type are being cast, the cross-block operating in the usual manner to alternately cover and uncover the side of the mold cavity. When short body type are required or called for

and the cross-block is brought as near as may be to the casting position, plunger 15 is advanced to insure that the cut-off blade or section 9 is in register with the mold cavity, whereupon said cut-off is advanced, and, entering until arrested by contact with the mold-blade, closes the upper end of the mold cavity to an extent equal to the thickness of said cut-off. As soon as the cast is made the cut-off blade or section 9 and plunger 15 are retracted, the cross-block is moved to uncover the side of the mold cavity and the type is ejected therefrom by the advance of the mold-blade.

Various forms and arrangements of actuating mechanism may be supplied for automatically or otherwise operating the gaging and cut-off members, but the preferred construction is one wherein the projection of the cut-off section is controlled by the record strip or pattern which governs the action of the matrix selecting and mold adjusting devices so that the composer of said record strip or pattern may designate which spaces or quads shall be low and which shall be high. To accomplish this on the type machine illustrated it is necessary that special provision be made for postponing the effective action of the low quad signal inasmuch as the type corresponding with a given signal and designated by the presentation of the latter during one cycle of operations is actually produced during the next succeeding cycle when the signal for the following type is operating; in other words, during each cycle of operations performed by the machine the type designated by the previous signal is produced and the parts are readjusted to accord with the signal at the time presented and operating. If, therefore, the low quad designating signal is to be associated with the quad signal when the latter is produced at the keyboard composing machine, its action upon the cut-off must be postponed to the cycle succeeding that at which the quad signal is presented, as otherwise said designating signal, if operative to advance the cut-off section of the mold during the same cycle in which it is presented, would have the effect of converting the previously designated character type into a low quad instead of changing the setting of the mold for the quad presently designated and to be produced during the succeeding cycle of operations. To meet this somewhat complicated situation the following simple, direct and effective plan has been devised. By means of competent actuating devices the cut-off 9 and registering plunger 15 are each coupled with a moving part of the machine in a manner to effect a reciprocation during each cycle of operations performed by the casting machine and at a time when the cross-block is at rest in casting position.

Coupled with the actuating devices of the cut-off section 9 is a lockout or means for suspending the action of said devices under the control of the designating signal of the record strip or pattern. The low quad designating signal, in the form of a perforation, is so placed in relation to the quad or space signal that it will be presented concurrently with the next succeeding signal, hence will be operative during the cycle in which the quad or space is cast instead of that in which it is designated. One form of mechanism involving this principle is illustrated. It comprises two shafts 20, 21, mounted in bearings on the frame of the casting machine and each coupled through an arm 22 and compression link 23 with one of a pair of levers 24, the latter engaged by cams 25 fast on the twin driving shafts 26 of the type machine.

Shaft 20 carries an arm 27 connected to gaging plunger 15 by a link 28, while shaft 21 carries an arm 29 connected to a plunger or rod 30 the latter working in a bearing 31 formed in the vertical section of the mold frame or support 17 in line with frame 10 carrying cut-off section 9. The end of rod or plunger 30 is recessed to accommodate adjusting screw 12.

The bearing supporting upper ends of shafts 20, 21, is provided with a cylinder or chamber 32 in which works a piston 33 whose rod 34 projects in a line intersecting the path of the outer or free end of arm 29. Piston rod 34 is provided with a notch or recess 35 for the passage of arm 29, and with a retracting spring 36, the arrangement being such that in the absence of pressure in cylinder 32 piston rod 34 will be retracted and present an obstruction to the forward motion of arm 29.

The lower end of cylinder 32 communicates through a duct 37 with a port 38 in the tracker board, and when pressure is admitted to said port the piston will be advanced until its notched or recessed portion 35 stands opposite arm 29 to permit the passing of the latter.

The low quad designating signal consists of a perforation 40 which instead of being associated directly with the perforation or perforations 41 constituting the space or quad signal is associated with the next succeeding type signal and may be produced by arranging a punch corresponding in lateral position with said perforation 40 in the strip but located one feed interval in rear of the series of type designating punches and coupling it with the space and quad keys so that when the space or quad signals are produced the low quad designating signal perforation 40 will be added to the signal perforations of the next preceding type. The pattern or record strip is delivered to the casting machine in the reverse order hence

the quad or space signal 41 having set the machine during one cycle, and the next signal containing perforation 40 being presented during the succeeding cycle at which the space or quad is cast, pressure is admitted through port 38 to cylinder 32 and the cut-off section will be advanced just before the fluid metal is injected into the mold.

The operation is as follows: During each revolution of the shafts 26, corresponding to a complete cycle of operations and at the time the cross-block 3 is held stationary in casting position, a reciprocating movement is imparted to arms 27 and 29. If at the time no low quad designating signal perforation 40 is presented to the tracker-board plunger 15 will advance to engage its seat in the cross-block, but the cut-off blade or section 9 will remain undisturbed, the arm 29 of its actuating devices engaging and being arrested by the piston rod 34. If, however, the designating signal 40 is at the time presented, piston rod 34 will be withdrawn from in front of arm 29 prior to the advance of the latter, and cut-off 9 will be projected into the mold cavity until arrested by contact with the mold-blade.

What I claim as new and desire to secure by Letters Patent, is:—

1. A low quad type mold provided with side-blocks and mold blade and in combination therewith, a cross-block forming one side of the mold cavity and movable to uncover the latter, and provided at its casting face with a movable section or blade adapted to be projected into the mold cavity, to serve as a cut-off therefor.

2. In a low quad mold for type machines a movable cross-block provided with a removable matrix seat and a cut-off blade or section supported in a guide or way in the face of said matrix seat.

3. A cross-block for type molds such as described provided with a movable cut-off section mounted upon a carrier supported and guided in a recess within the cross-block and means for adjusting said cut-off section.

4. A cross-block for type molds such as described, provided with a cut-off section adapted to be advanced within and withdrawn from the mold cavity and in combination therewith, a carrier for said cut-off section mounted within a recess in said cross-block, and an adjusting screw and a retracting spring engaging said cut-off section.

5. In a low quad type mold provided with side-blocks, a movable mold blade, and a reciprocating cross-block equipped with a movable cut-off section adapted to enter the mold cavity and occupy one end thereof, and in combination therewith, means for gaging the position of the cross-block to insure registry of the cut-off section with the mold-cavity.

6. In a low quad type mold, the combina-

tion of the following elements, to wit; spaced side blocks; an intermediate movable mold-blade; a reciprocating cross-block forming one side wall of the mold cavity and provided with a cut-off section adapted to enter said cavity; and a gaging device mounted upon the mold frame or support and engaging the cross-block to bring its cut-off section into registry with the mold cavity.

7. A low quad mold provided with a movable cross-block carrying a cut-off section or blade adapted to enter and be withdrawn from the side of the mold cavity; and in combination therewith, means for gaging the position of the cross-block to cause its cut-off section to register with the mold cavity, and means for advancing said cut-off section.

8. A low quad mold provided with a movable cross-block equipped with a cut-off section adapted to enter the mold cavity and in combination therewith means for gaging the position of the cross-block relative to the mold cavity to insure registry between the cut-off section and said cavity, and controllable means for advancing said cut-off section.

9. In a low quad mold for type casting machines, the combination of the following elements, to wit; spaced side blocks; a longitudinally movable mold-blade intermediate said side-blocks; a cross-block movable transversely of the mold blade in contact with the side blocks and provided with a movable cut-off section adapted to enter and be withdrawn from the mold cavity; a gaging means supplementing the actuating devices of the cross-block, to insure registry between the cut-off section and mold cavity; and yielding actuating devices for the cut-off section operating to advance the latter into contact with the mold blade within the mold cavity to close one end of the latter.

10. In a low quad mold equipment, the combination of the following elements, to wit; spaced side blocks located in fixed relation upon a mold frame or support; a mold blade guided on said mold frame to reciprocate longitudinally between said side blocks; a cross-block reciprocating transversely of the mold blade provided with a cut-off section adapted to enter between the side blocks and contact with the mold-blade, said cut-off section being mounted upon a carrier in the cross-block and provided with a retracting spring and opposed adjusting device; and means for gaging the position of the cut-off section relative to the mold cavity, including complementary centering members the one carried by the cross block and the other by the mold frame or support.

11. A low quad mold equipment for type casting machines including the following elements, in combination, to wit; a mold

provided with a movable cross-block containing a movable cut-off section adapted to enter the mold cavity; and controllable actuating devices for said cut-off section.

- 5 12. A low quad mold equipment for type casting machines, including the following elements, in combination, to wit; a mold provided with a reciprocating cross-block containing a movable cut-off section adapted to enter the mold cavity; a reciprocating gaging device for the cross-block; and means for reciprocating said cut-off section, including actuating devices and a controllable means for temporarily locking out or
10 suspending the action of said actuating devices.

13. In a low quad mold equipment for type casting machines, the combination of the following elements, to wit; a mold including side blocks, a reciprocating mold-blade and a cross-block, the latter provided with a cut-off section; and controllable actuating devices for said cut-off, including a reciprocating member coupled with the
20 driving mechanism through yielding transmission devices, and a stop and actuating piston for alternately arresting and releasing said reciprocating member.

14. In a low quad mold equipment for

type casting machines, the combination of 30 the following elements, to wit; a mold provided with a cross-block containing a cut-off section normally flush with the casting face of said cross-block, and adapted to enter the mold cavity; means for gaging the 35 position of the cross-block to insure registry between the cut-off section and the mold cavity; actuating devices for said cut-off section; and a piston controlling the action of said actuating devices in advancing the cut- 40 off section.

15. In a low quad mold equipment for type casting machines the combination of the following elements, to wit; a mold provided with a movable cut-off section or member; and controllable actuating means for said cut-off section including a pattern, a tracker board, a piston and a cylinder, the latter directly connected to a port in the tracker board, said port being controlled by 50 a perforation in the pattern registering with the designated port to admit pressure directly to the piston.

FREDERICK S. CHANONHOUSE.

Witnesses:

FRANK H. WEBBER,
F. C. KENDALL.