F. H. PIERPONT.

TYPE CASTING MACHINE.

APPLICATION FILED OCT. 14, 1907.

925,024.

Patented June 15, 1909.

2 SHEETS—SHEET 1.

Fig. 2.

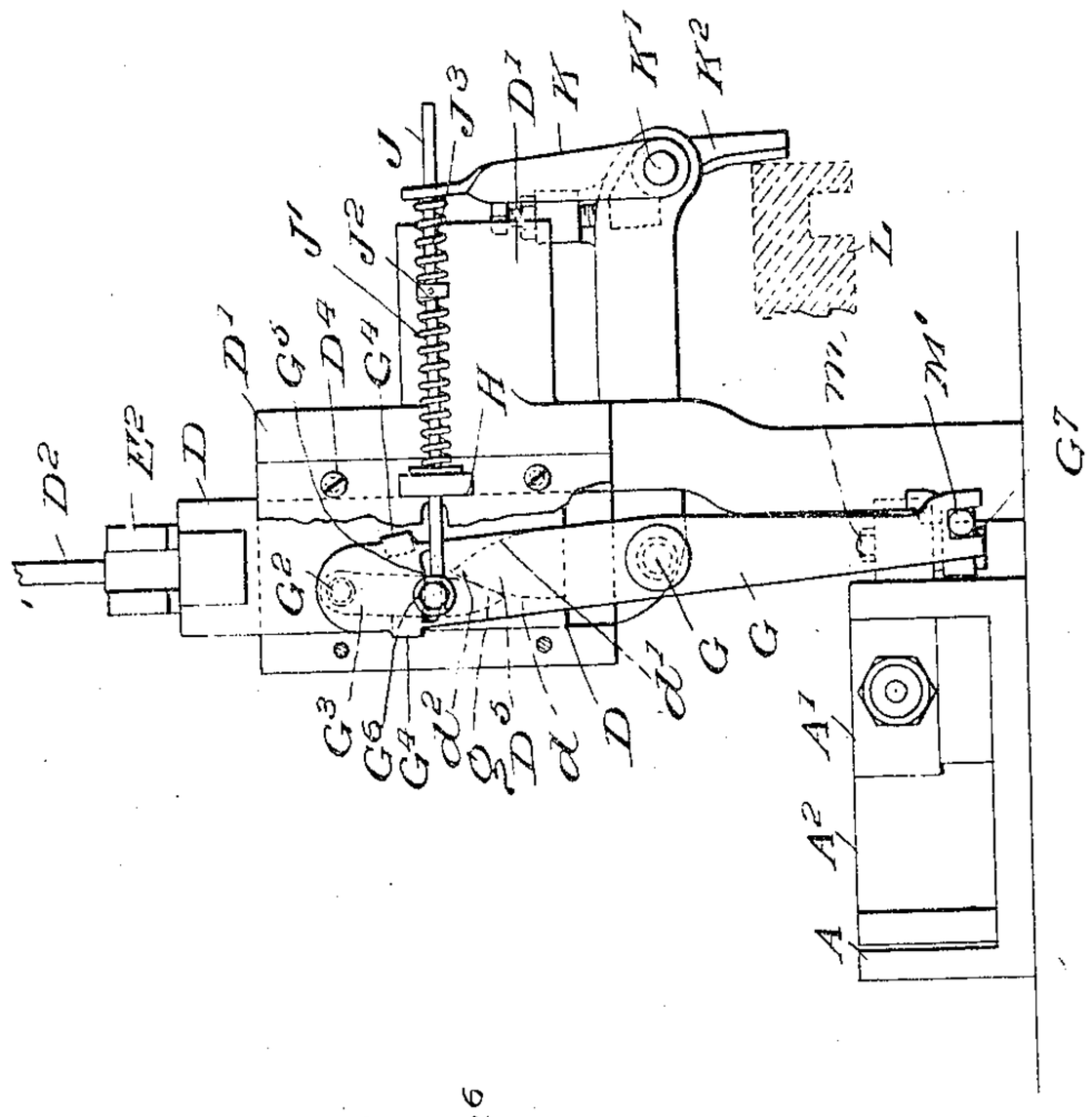

Fig. 1.

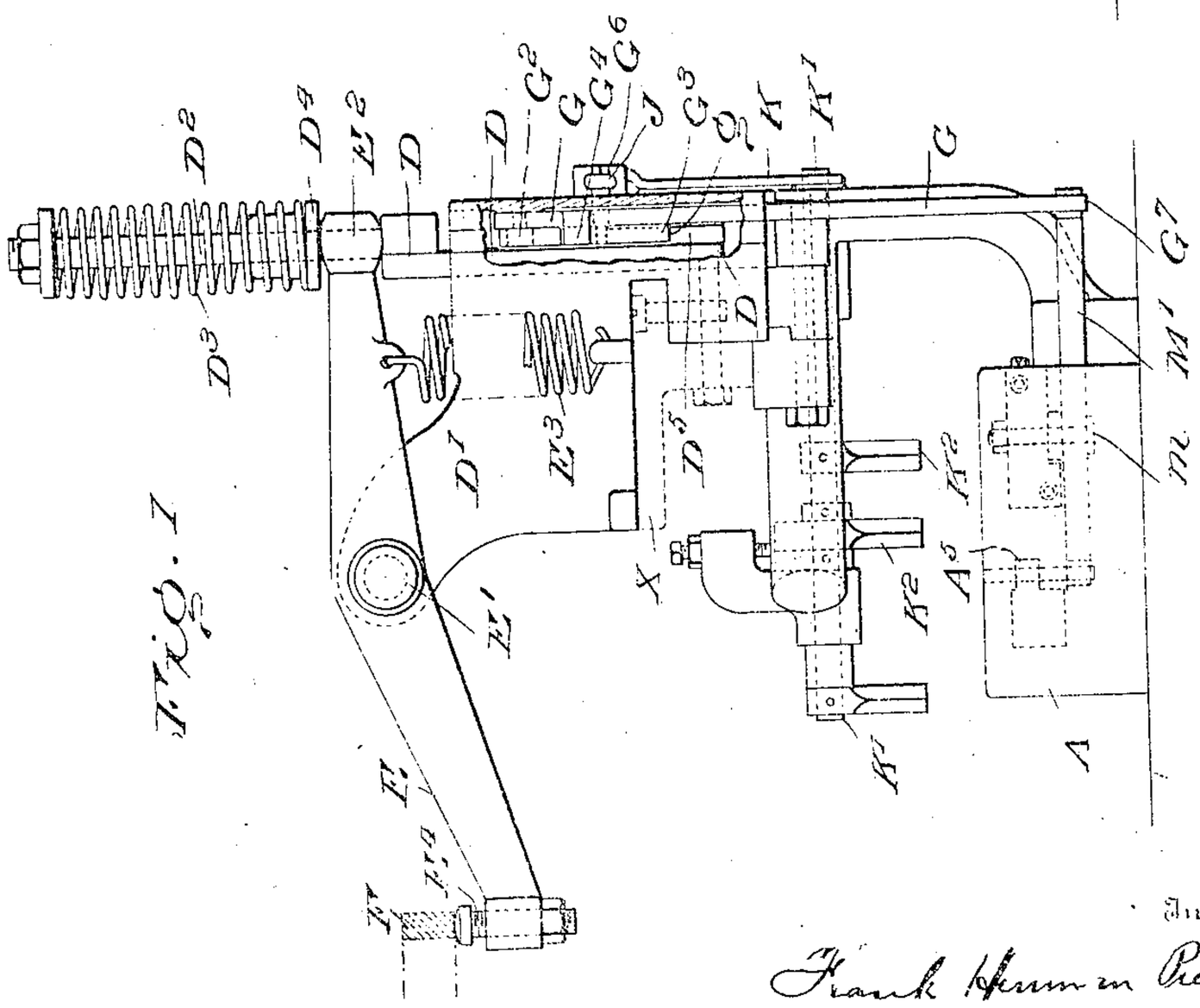

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Fig. 3

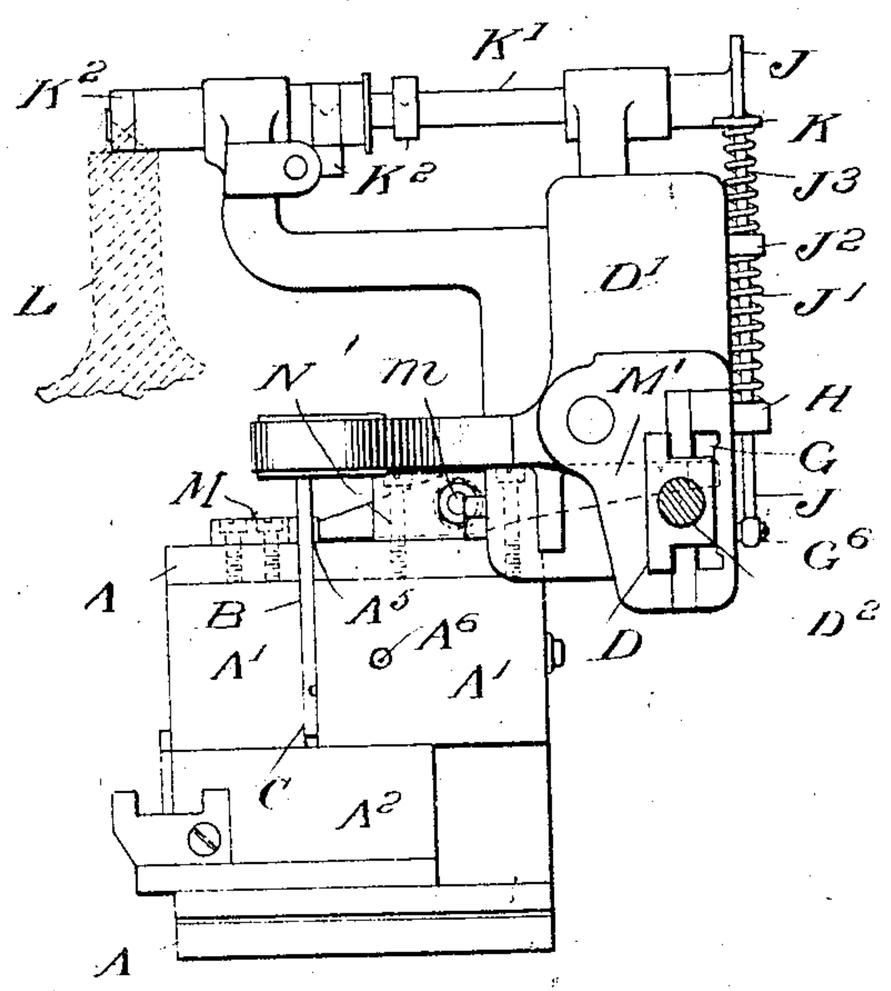


Fig. 4.

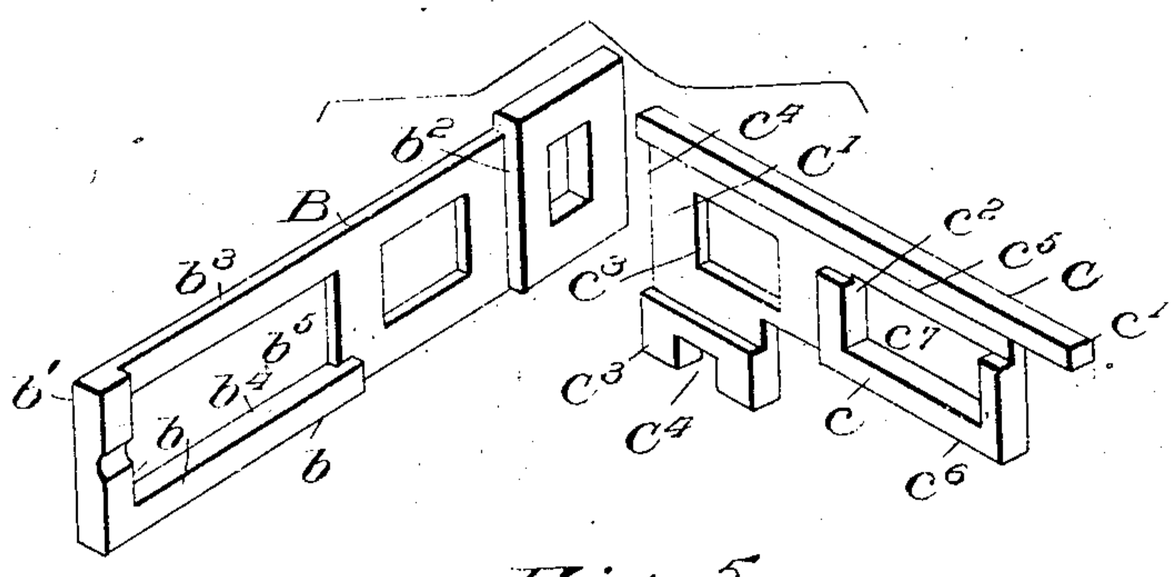
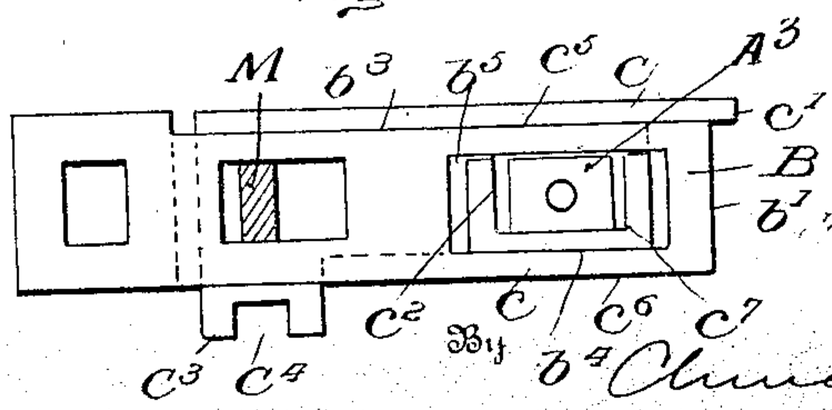


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

FRANK HINMAN PIERPONT, OF HORLEY, ENGLAND, ASSIGNOR TO LANSTON MONOTYPE MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF VIRGINIA.

TYPE-CASTING MACHINE.

No. 925,024. Specification of Letters Patent. Patented June 15, 1909.

Application filed October 14, 1907. Serial No. 397,409.

To all whom it may concern:

Be it known that I, FRANK HINMAN PIERPONT, a citizen of the United States, temporarily residing at Horley, county of Surrey, England, have invented a certain new and useful Improvement in Type-Casting Machines; 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 of this specification, and to the figures and letters of reference marked thereon.

This invention relates to that class of type casting machines in which the mold is equipped with a sectional or divided mold-blade for the production of either full body character type or short body space type and quads, and it has for its principal objects to provide improved guiding and holding means for the mold-blade sections, designed to prevent springing and the sticking or, as it is termed, "hanging up" of said sections in the mold-blade channel or guideway, and to provide an effective mechanism for controlling the relative movements or adjustments of said sections.

To which ends the invention consists in the several novel features of construction, combinations and arrangements of parts hereinafter fully described.

In the accompanying drawings illustrating a preferred form of embodiment—Figure 1 is a side elevation of the mold and sectional mold-blade actuating mechanism arranged for application to a well known form of type casting machine. Fig. 2 is an end elevation, and Fig. 3 is a top plan view of the mechanism shown in Fig. 1, with the addition of a section of the die-case forming part of the type casting machine and the omission of the actuating lever for the driving member of the switch mechanism. Fig. 4 represents in perspective on an enlarged scale the mold blade sections detached and separated. Fig. 5 is a similar view showing the two sections assembled with the gage block and top bearing in position.

Similar letters of reference in the several figures indicate the same parts.

With the exception of the sectional mold-blade and its actuating mechanism the type casting machine with which the improvements are shown associated is substantially that of Patent No. 625,998, of May 30, 1899, of which L is a section of the die-case, F a portion of the centering lever and X a portion of the bridge supporting the die case and centering pin. As will be obvious other forms of casting machine may be employed. The mold may be of any approved construction and in its general features that represented is similar to Patent 752,814, of Feby. 23, 1904, of which A is the frame or base plate, A′ the adjustable side blocks, A^2 the movable cross-block, M the front stop or gage for the mold-blade, A^3 the gage block and top guide, and A^6 the adjusting screw for said top guide.

The mold blade channel is formed between the parallel adjacent faces of the side-blocks A′, the latter contacting with the interposed gage block to determine both the width of the mold-cavity and of said channel of which latter the base plate to which the side-blocks are clamped forms the bottom wall.

The mold blade is of the divided or sectional type illustrated in Patents 828,450, of August 11, 1906, and 857,728, of June 25, 1907, but differs therefrom in several important particulars as will presently appear.

In the prior structures the main or lower mold-blade section was of uniform thickness and extended the full length of the mold-blade channel and in rear of the latter for the reception of the front stop and the cross-pin of its actuating devices, and in order that the gage block might occupy a central position relative to the side blocks said lower or main section was recessed for its accommodation and to permit it to be utilized as a top bearing for holding said section to its seat. The upper or cut-off mold-blade section resting and taking its bearing upon the upper edge of the lower mold-blade section also extended the full length of and beyond the channel. This arrangement necessitated the employment of a supplemental top bearing for the upper section, and said section being comparatively narrow and long was liable to spring and thus open the joint between the sections at the casting face; moreover, difficulty was experienced in adjusting the pressure on the two sections in a manner to maintain the joints closed and at the same time permit

the requisite freedom of motion. To overcome or avoid these and other defects and to render the upper section more rigid and dispense with the supplemental top bearing therefor the following changes and improvements have been devised: To the upper mold-blade section C whose width closely approximates that of the mold-blade channel, is added a dependent web or plate C′ provided with two openings c^3 c^7 one for the front stop M and the other for the gage block and top bearing A^3. The portion of plate C′ which is received within the mold-blade channel is of the same thickness as the mold-blade section C, excepting at a point immediately below said section and extending longitudinally thereof where it is recessed or cut away to a depth equal to or slightly in excess of one half its thickness, and the rear end of said plate outside the channel may be and preferably is reduced in the same degree. The lower face c^6 of plate C′ and the lower wall of opening c^7 are in parallel with the lower overhanging face c^5 of mold-blade section C.

To accommodate plate C′ and at the same time preserve effective side bearings b for engaging the wall of the channel the main or lower mold-blade section B is cut away or recessed at a point above and in rear of the opening b^5, the latter corresponding in location to the previous gage block opening, but now adapted to receive the thicker portion of plate C′ or that containing side bearings c.

When the two sections are assembled the lower edge c^6 of plate C′ contacts with and rides upon the lower face b^4 of opening b^5 and the lower face c^5 of section C contacts with the upper face b^3 of section B, so that by locating the gage block A^3 in opening c^7 of blade C′ it can be utilized as the top bearing for both sections, and a single adjustment will suffice to hold the sections together and upon the bottom of the mold-blade channel.

Preferably the parts are so proportioned that the section B does not take its side bearing on plate C′ but directly upon the wall of the channel through its bearing surfaces b; and the same is true of plate C, the bearing surfaces c contacting with the wall of the channel next section B. This is done to obviate the necessity of accurately dressing the proximate faces of section B and plate C′ and to avoid interference with the free movement of both sections either separately or together. It may here be mentioned that the face of section B opposite the bearing surfaces b is flat and parallel with the latter, and the same is true of the face opposite bearing surfaces c of plate C′.

The extreme rear end of section B containing the cross pin opening is not reduced but is retained of full width, thus providing a gaging surface b^2 against which the rear end of the upper mold-blade section, or its depending plate C′, contacts when the casting faces of the two sections are in alinement for simultaneous adjustment.

The actuating mechanism for producing and controlling the movements of the upper mold-blade section C to advance the latter beyond the lower section B, when casting short body type, and to hold said upper section firmly in contact with the alining gage b^2 when full body type are desired, is preferably coupled to said section C, through blade C′, the latter being provided with an extension C^3, notched as at C^4 or otherwise provided with a separable bearing for one arm of a lever M′, pivoted at m to a block N preferably secured to the mold and removable therewith.

The actuating mechanism is coupled with lever M′ or equivalent transmitting device, and it comprises, among its distinguishing elements, a driving member D coupled with a moving portion of the casting machine, such as the centering-pin actuating lever F; a driven member, such as lever G, coupled with the upper mold blade section, as by its engagement with transmitting lever M′; and a switching mechanism preferably controlled from a moving part of the casting machine, for example, the die-case L, and operating to determine the direction of motion imparted by the driving to the driven member.

In the preferred form of embodiment illustrated the driving member D is supported to reciprocate in guides on a bracket D′ fast to the frame X of the casting machine, and it is coupled with the centering lever F through the medium of a lever E pivoted at E′ to bracket D′ and provided at one end with an adjustable bearing E^4, to receive said lever E, and at the opposite end with a retracting spring E^3. Lever E engages driving member D between fixed and yielding bearings connected to the latter so that the movement derived from spring E^3 will be positively transmitted through the fixed bearing, while that derived from centering pin lever F will be transmitted through the yielding bearing. To this end lever E takes its bearing on the driving member between the upper end of the latter and a spring D^3, interposed between a loose washer D^4 resting upon the lever and an opposing bearing carried by the driving member, such as an adjustable nut on the rod or extension D^2 carried by said driving member. The driven member or lever G is pivotally supported at G′ on bracket D′ and its lower end is furcated to form an open or detachable connection with transmitting lever M′.

The switching mechanism interposed between the driving and driven members, comprises a reversing or double cam D^5 whose oppositely inclined surfaces d d'

merge into a leading edge or point d^2, and a switch or tongue G^3 movable with relation to the leading edge or point of the double cam in a direction transverse to the line of movement of said cam, one of said elements (double cam D^5 or switch G^3) being connected to the driving and the other to the driven member, so that when the driving member is reciprocated it will cause the engagement of one or the other reversed cam surfaces d d' according to the setting of the switch member, and thereby effect a movement of the driven member in the direction indicated by the engaged cam surface; or, if already in the indicated position, it will retain it there and prevent displacement.

In the present instance the reversing or double cam D^5 is attached to and carried by the driving member D, while the switch G^3 is pivotally secured to the driven member or lever G, the latter provided with studs or bearings G^4 for limiting the motion of said switching member. When in its normal or inactive position the driving member D is held by spring E^3 with the point of its double cam D^5 beyond or below the free end of switch G^3, so that the latter is free to swing between stops G^4 to present its point on either side of cam D^5; and accordingly as said switch is thrown to the right or left, in Fig. 2, the next ascent of the driving member will force the upper mold-blade section beyond the lower mold-blade section, so that a short body type will result, or it will force upper mold-blade section back against gage b^2 and thus bring the casting faces of the two sections in alinement, to produce full body or character type, the set wise dimension of which will be determined by the usual adjusting devices coupled with the lower mold-blade section.

It may here be remarked that the adjustment of the lower mold-blade section is effected by a retrograde movement of said section and precedes the final descent of the centering pin lever F, hence the movement imparted to the upper mold blade section to bring the two sections into alinement at the casting face does not interfere with the adjustment mentioned; the spring D^3 yielding when the two mold-blade sections are properly positioned.

It is obvious that any appropriate and competent means may be applied for shifting and retaining the controllable switch member G^3 in either of its operative positions. The preferred form of control mechanism illustrated includes a rod J supported in a bearing on bracket D' and pivotally connected to a pin G^6 carried by switch G^3 and projecting through a slot in the cover plate D^4.

As the character or full body type usually exceed in number the short body space type or quads the machine is preferably arranged to normally maintain the upper mold-blade section retracted against the alining gage b^2, but in a manner not to interfere with the movements of the mold-blade either when adjusting or ejecting. To this end a spring J' is applied to rod J (as by being interposed between its bearing on bracket D' and a collar J^2 fast on the rod) in a manner to hold switch G^3 to the right, in Fig. 2, thus maintaining it in position to be engaged by the surface d' of the cam D^5 so that upon the ascent of the driving member the upper mold-blade section, if at the time projected, will be retracted against the gage. Having been brought to the position indicated spring J' serves to retain it there until power is applied to overcome the spring and shift the switch to the opposite side of cam D^5, said spring yielding to the movements of the mold-plate both in ejecting and adjusting, while holding the upper mold-blade section in contact with its gage; but should the upper mold-blade section be displaced, the switch being still held in position, the next ascent of the driving member would replace and lock it in position during the casting interval, which latter occurs while the centering pin lever F is in its lowermost position.

The mechanism shown for automatically throwing the switch when low body spaces or quads are required includes a rock shaft K' supported in bearings on bracket D' and provided with one or more arms K^2 in position to be engaged by the end of the die-case L when the latter is shifted to the extreme of one of its two way movements. Shaft K' also carries an arm K in position to engage a spring interposed between it and collar J^2 on rod J, so that when said shaft is rocked it will move switch G^3 to the opposite shoulder G^4 from that normally engaged and bring it into the plane of movement of cam surface d, to cause the advance of the upper mold-blade section on the next ascent of driving member D.

The operation of the mechanism is as follows: When the cross-pin is operated to adjust the mold blade preliminary to a cast, lever F descends and upon contacting with bearing E^4 it rocks lever E in a direction to lift driving member D through the medium of interposed spring D^3. The switch G^3 of the driven member G lies to one side or the other of the double cam D^5 carried by driving member D and in contact with one of the stops G^4 of said driven member, so that as the driving member rises lever G is rocked or displaced laterally to advance or retract the upper mold-blade section. The direction of movement depends upon the position occupied by the switch member G^3, the latter being set prior to the engagement of cam D^5. If a low space or quad is to be cast, the die-case is brought into such position that by striking against one of the arms K^3 it will rock shaft

K′ and thereby cause arm K to advance rod J, and move switch G^3 into the position shown in Fig. 2, that is, against the left hand stop G^4 of lever G. As driving member D rises its cam D^5 engages switch G^3 in a manner to displace the driven member or lever G to the left, thereby causing the advance of the upper mold-blade section across the mouth of the mold until arrested by the engagement of the rear face of opening c^3 with the front stop, when the end of the mold-blade section will contact with the cross-block. If the next type called for is a full body or character type, the withdrawal of the die-case L from arm K^3 permits spring J′ to return switch G^3 against the right hand stop G^4 thus bringing it within range of cam surface d' so that upon the next ascent of driving member D the upper end of lever G will be shifted to the right, thereby retracting the upper mold-blade section and seating it against gage b^2 where it is retained by spring J′ until the switch is again shifted.

The return of the upper mold-blade section C to normal position after a short body type has been cast may be effected by the spring J′ alone, if of sufficient tension to overcome the resistance of the switch, driven member and parts coupled therewith, in which event cam surface d' would merely operate to lock said mold-blade section in position during the casting operation, and to insure its return should the spring alone fail to accomplish this result; or the spring, if lighter, may operate to simply shift the switch to normal position against the right hand stop and to exert pressure on the mold-blade section sufficient in degree to maintain the latter in contact with its positioning gage b^2.

In machines of this class interchangeable molds are employed for different sizes or character of faces and the actuating mechanism is so organized that this may readily be accomplished without involving any change in the actuating devices further than this, if actuating lever M′ is supported upon the mold it will be removed with the latter and transferred to the substitute mold, and if mounted on the frame of the machine, the substitution can be effected without disturbing said lever, the separable bearings provided at each end of the lever permitting this to be accomplished.

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

1. A type mold provided with a divided mold-blade the outer or overlying section whereof is furnished with a longitudinal web or plate within the mold-blade channel.

2. A type mold provided with a divided mold-blade the outer or overlying section whereof is furnished with a laterally projecting web or plate extending into the mold-blade channel to one side of the lower mold blade section.

3. A type mold provided with a divided mold-blade the upper or outer section whereof is furnished with a web or plate extending into the mold-blade channel and provided with a seat and a top bearing engaging said seat.

4. A divided or sectional mold-blade for type molds comprising a bottom or main section and a superposed independently movable outer section, the latter provided near its casting face with a laterally projecting web or plate provided with a seat, and a top bearing engaging said seat.

5. A divided or sectional mold-blade for type molds comprising a bottom or main section, and a superposed independently movable section, the latter provided with a longitudinal web or plate engaging a bearing surface on the lower section and provided with a seat and a top bearing engaging said seat.

6. A divided or sectional mold-blade comprising a lower or main section provided with a transverse opening, and an upper or superposed section, the latter equipped with a longitudinal web or plate in parallel with the main section and adapted to enter the opening in said main section to form a top bearing therefor, said upper or superposed section being also provided with a seat and a top bearing engaging said last named seat.

7. A divided or sectional mold-blade for type molds the same comprising a main or lower section provided with a transverse opening in proximity to its casting face with one side reduced or cut-away above and in rear of said opening, and an upper or superposed section seating upon the edge of the main section and provided with a dependent web or plate containing an engaging surface and a top bearing resting upon said engaging surface.

8. A divided or sectional mold-blade for type molds the same comprising a main or lower section provided with a transverse opening in proximity to the casting face with one side cut away or recessed at a point above and in rear of said opening, an upper or auxiliary section superposed upon the main section at its casting end and provided with a web or plate adapted to enter the recessed portion of the main section and project into the opening in the latter, said web or plate being provided with a seat for the top bearing and a top bearing engaging said seat.

9. In a type mold provided with a mold-blade channel and in combination therewith a divided mold blade provided with a main or lower section engaging opposite walls of said channel and an upper section superposed upon the main section and provided with a depending web or plate riding in a

side recess in the main section within said channel and provided with side bearings engaging opposite walls thereof.

10. In a type mold provided with a mold-blade channel and in combination therewith a divided or sectional mold blade, the lower or main section whereof is provided with side bearing surfaces engaging opposite walls of the channel and a transverse opening within the latter and the upper section, superposed upon the main section is provided with a dependent web or plate lying within a recess in one side of the main section and a gage block and top bearing located within an opening in said dependent web or plate within said channel.

11. In a type casting machine provided with a mold embodying a divided or sectional mold-blade whereof the main or body section is coupled with the mold-adjusting devices and in combination therewith an actuating mechanism for the other or cut-off section including a driving member, a driven member coupled with said last named section, and a switch interposed between said driving and driven members for controlling the direction of the movement imparted to the latter.

12. In a type casting machine provided with a mold equipped with a divided or sectional mold-blade for dimensioning the mold-cavity whereof the main or body section is coupled to the adjusting devices and provided with a gage for alining the casting faces of the two sections, and in combination therewith, an actuating mechanism for the other or cut-off mold-blade section provided with a driven member coupled with said cut-off section, a driving member deriving its motion from the casting machine, and a switch interposed between the driving and driven member to determine the direction of motion imparted to the latter.

13. In a type casting machine provided with a mold equipped with a divided or sectional mold-blade whereof the main or body section is coupled with the dimensioning devices and provided with a gage for alining the casting faces of the two sections, and in combination therewith, a front stop for both mold blade sections and an actuating mechanism for reciprocating the upper or cut-off section, to cause its engagement with either the front stop or alining gage, including a driving member, a driven member coupled with said cut-off section and a switch for controlling the direction of motion or position of said driven member.

14. In a type casting machine provided with a mold containing a divided mold-blade the sections of which are independently movable and the main or body section coupled to the mold adjusting devices and in combination therewith an actuating mechanism for the cut-off section including a driving member, a driven member coupled to said cut-off section and a switch interposed between said driving and driven members for determining the direction of the latter, and controlling means for said switch.

15. In a type casting machine provided with a mold containing a divided mold-blade the main or body section whereof is coupled with the mold dimensioning devices, and in combination therewith, the following elements, to wit; a driven member coupled with the cut-off section of the mold-blade; a reciprocating driving member; a switch interposed between the driving and driven members to determine the direction of motion of the latter; and means deriving motion from a moving part of the casting machine and coupled with said switch for determining the position of the latter and of said cut-off section.

16. In a type casting machine provided with a divided or sectional mold-blade of which the main or body section is coupled to the mold dimensioning devices, an actuating mechanism for the cut-off mold blade section including the following elements, in combination, to wit; a reciprocatory driving member provided with reversing actuating surfaces; a driven member coupled with said cut-off section and provided with a switch movable transversely of the line of motion of the driving member; and yieldable means for normally retaining the switch in the path of one of said actuating surfaces.

17. In a type casting machine provided with a mold equipped with a divided mold blade of which the main or body section is coupled with the adjusting devices and is provided with an alining gage for the independently movable cut-off section, the combination therewith of the following elements, to wit; a reciprocatory driven member coupled with the cut-off mold-blade section; a switch movable between abutments on said driven member; yieldable means coupled with said switch and operating through said driven member to retain the cut-off section in engagement with the alining gage; and a driving member adapted through its engagement with the switch to shift the driven member in the direction determined by the switch.

18. In a type casting machine the combination to form an actuating mechanism for the independently movable cut-off section of a divided mold-blade, of a driving member coupled with a moving part of the casting machine; a driven member carrying a switch for determining the direction of motion of the driven member, said switch being arranged to be acted upon by the driving member; means for communicating motion from the driven member to the cut-off section of the mold-blade; and a spring coupled

with the switch in a manner to retract the cut-off section.

19. In a type casting machine provided with a mold equipped with a divided mold-blade and in combination therewith a driven member coupled with the cut-off section of said mold-blade; a reciprocatory driving member coupled with a moving part of the type casting machine through a yieldable connection; and a switch carried by the driven member in position to be acted upon by said driving member; a spring coupled with the switch to hold it normally to one extreme of its movements.

20. An actuating mechanism for the cut-off section of a divided mold blade forming part of a type mold consisting of the following elements in combination, to wit; a reciprocatory driving member; an actuating lever adapted to be engaged by a moving part of the casting machine and engaging said driving member through opposed fixed and yielding bearings thereon; a reciprocatory driven member adapted for connection with the cut-off section of the mold-blade and provided with a switch, the latter movable transversely of the path of movement of an engaging device carried by the driving member and between limiting stops on the driven member; and a spring retracted actuating device coupled with said switch.

21. An actuating mechanism for the cut-off section of a divided mold-blade forming part of the mold of a type casting machine consisting essentially of the following elements in combination, to wit; a reciprocatory driving member provided with means for connecting it with a moving part of the casting machine; a reciprocatory driven member adapted for connection with the cut-off section of the mold-blade and provided with a switch movable between limiting stops; a spring retracted actuating device engaging said switch and adapted to be engaged by a moving part of the machine to throw the switch.

22. In a type mold and in combination with the side blocks forming the mold blade channel, a divided or sectional mold blade, the upper or cut-off section whereof is provided with a longitudinal web in parallel with and to one side of the lower or main section and with an overlapping portion engaging said main section to form a top bearing therefor, and an adjustable top bearing engaging the web of the upper or cut-off section for holding both sections down in working position.

23. A type mold including the following elements in combination, to wit; side blocks spaced to form a mold blade channel; a divided or sectional mold blade working in said channel comprising a main or lower section and an upper or cut-off section the latter overlying the main section and provided with a dependent web alongside the main section; and an adjustable top bearing engaging the web of the upper or cut-off section for retaining both sections in contact and preventing displacement of either section.

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Witnesses:
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R. J. Williams.