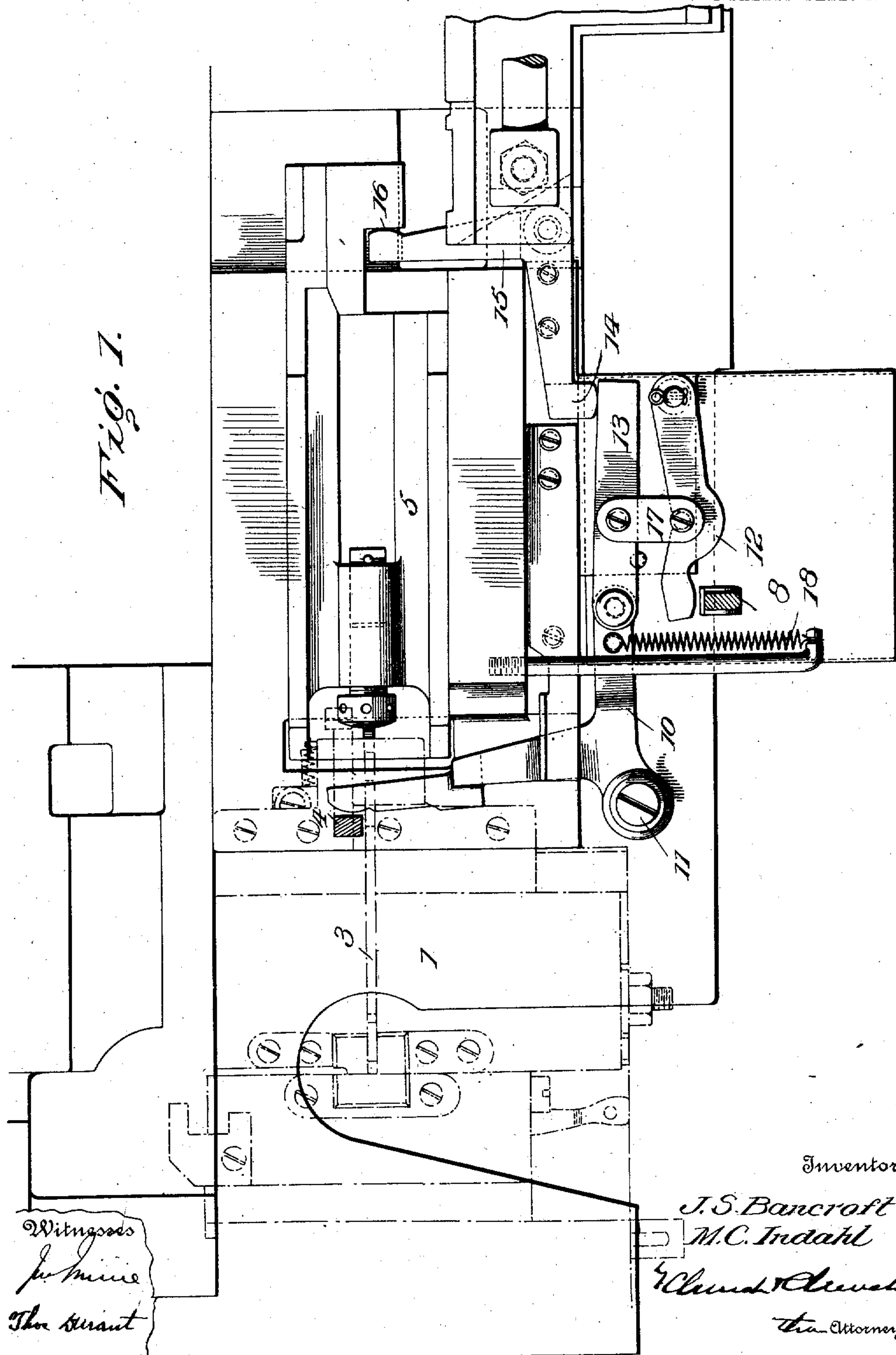


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 LOW QUAD MOLD CONTROL MECHANISM.  
 APPLICATION FILED JUNE 16, 1910.

989,553.

Patented Apr. 18, 1911.

2 SHEETS—SHEET 1.

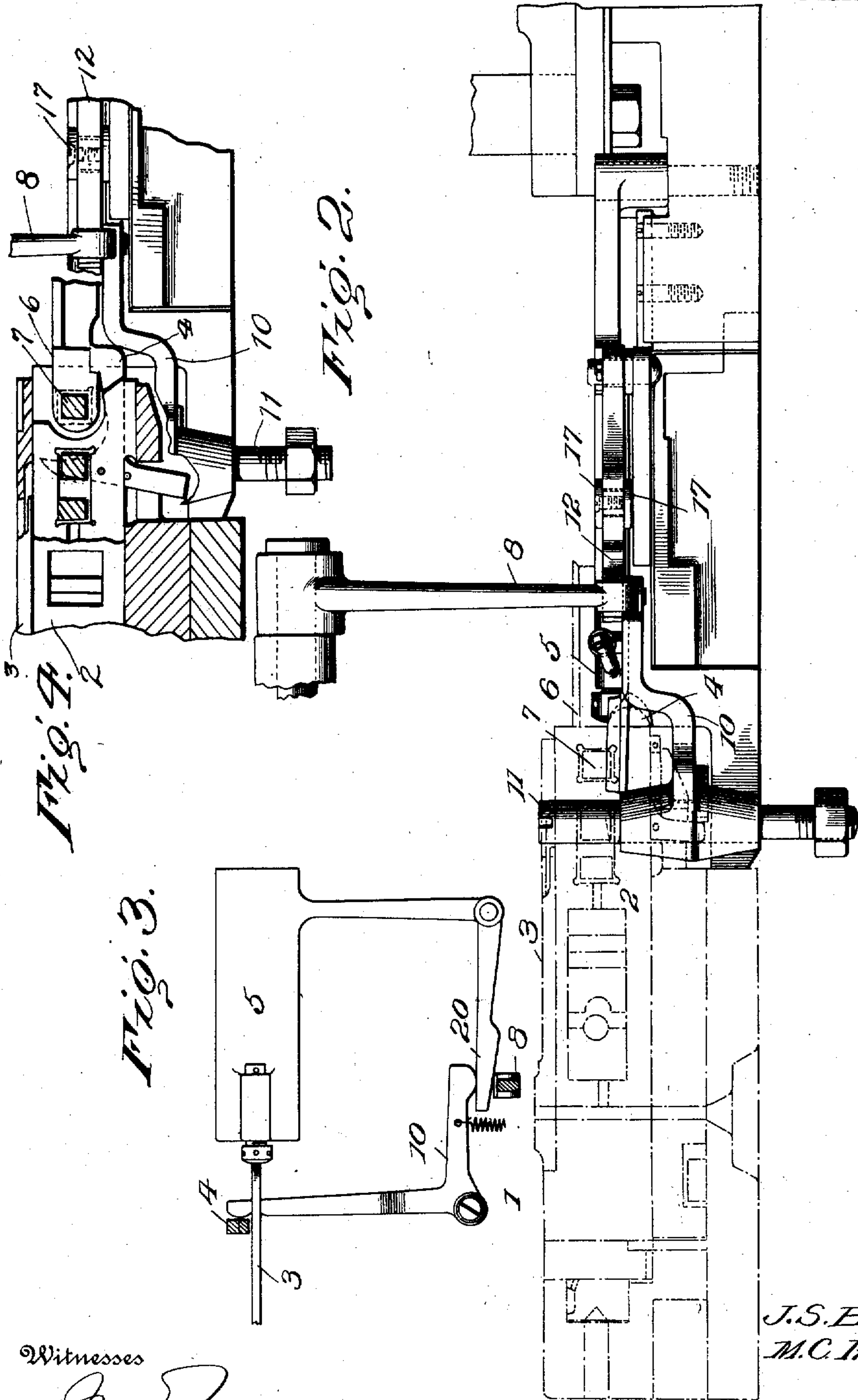


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Witnesses

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# UNITED STATES PATENT OFFICE.

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## LOW-QUAD-MOLD-CONTROL MECHANISM.

989,553.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed June 16, 1910. Serial No. 567,278.

*To all whom it may concern:*

Be it known that we, JOHN SELLERS BANCROFT and MAURITZ C. INDAHL, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Low-Quad-Mold-Control Mechanism; and we 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 improvements upon the actuating devices for the cut-off section of a low quad mold such as illustrated in Patent No. 962,411, dated June 28, 1910, and has for its principal objects to prevent the hanging up of the cut-off section, to render more uniform the load upon the actuating devices for said section, and to reduce wear upon the contacting surfaces.

The mold referred to is equipped with a divided or sectional mold blade whereof the lower or main section is connected to the actuating head by the cross-pin, and the upper or cut-off section carries a latch engaging the actuating head to hold the cut-off section against a gaging shoulder on the main section, whereby the casting faces of the two sections are brought into alinement to operate as an integral mold blade for casting character or full body type, the dimensioning of the mold cavity being effected by retracting the actuating head until the main section contacts with and is arrested by a previously adjusted abutment slide. To insure the proper alinement of the casting faces of the sections the cross-pin is permitted slight lateral movement relative to the main section with which it is connected so that the pull of the actuating head will, under these conditions, be transmitted through the latch and cut-off section to the main section thereby insuring intimate contact between the gaging surfaces connecting the two sections. When, however, a low

quad is called for or indicated the latch is withdrawn, to disconnect the mold blade sections, the cut-off section is advanced to close the end of the mold cavity, and the main section is abandoned to the control of the actuating head which retracts it until arrested by the abutment slide.

The withdrawal of the latch and advance of the cut-off section is effected through the medium of a lever or actuator coupled with and deriving motion from the reciprocatory centering pin by which the selected matrix is clamped upon the mold, the arrangement being such that the actuator is brought into operative engagement with the latch only in the event the centering pin is prematurely engaged and its motion arrested, as by encountering a low-quad matrix.

The adjustment of the mold immediately precedes the seating of the matrix and as this last named operation is effected by the centering pin it follows that the effective action of the actuator upon its latch must take place in the very short interval measured by the difference between the travel of the centering pin when arrested by a high quad-matrix and when engaged by a low or character matrix, and further, that the timing of the actuator, in-so-far at least as its effective action is concerned, is subject to variation by reason of the shifting of the latch in relation to the actuator incident to the mold adjustments. In consequence of this timing and because of the very limited opportunity afforded it sometimes happens, as when the mold is adjusted for the smallest type with the latch most remote from the actuator and the abutment in its most advanced position, the mold blade will be seated upon the abutment slide before the actuator has reached and withdrawn the latch, thereby greatly increasing the load upon the actuator operating devices and the wear upon the contacting surfaces between the latch and actuating head, thus retarding if not entirely preventing the withdrawal of the latch and advance of the cut-off section at the time indicated.

Now the principal object of the present



invention is to eradicate this defect and insure the prompt action of the cut-off section in response to the motion of its actuator, and this is accomplished by the addition of an automatic compensator adapted to preserve a constant relation between the actuator and its latch and cause the withdrawal of the latch to precede, in point of time, the seating of the mold blade under pressure upon its gaging abutment.

The invention also includes a novel form and construction of automatic compensator interposed between the actuator and latch and controlled by the mold dimensioning device or abutment slide.

In the accompanying drawings illustrating a preferred form of embodiment of the invention—Figure 1 is a top plan view of a portion of a type casting machine with the improvements applied thereto; Fig. 2 is a side elevation of Fig. 1, and Fig. 3 is a diagrammatic view of a modified form of the apparatus. Fig. 4 is a detail view, partly in section, showing the connection between the cut-off section of the mold blade and the actuating head.

Like numerals designate like parts in the several figures.

The invention as herein illustrated is specially designed for application to the type casting machine of Patent No. 625,998, of May 30, 1899, when equipped with the low quad mold actuating mechanism of Patent No. 828,450, of August 14, 1906, or Patent No. 962,412 of June 28, 1910, and the low quad mold of Patent No. 962,411 of June 28, 1910, hereinbefore mentioned, to which reference may be had for a more detailed disclosure.

As the present improvements relate solely to the means for transmitting motion from the actuator to the latch of the divided mold blade, only those parts of the complete organization directly involved are illustrated in the drawings, the same including the mold 1 with its main and cut-off mold-blade sections 2, 3 and latch 4; the movable abutment slide 5; the actuating head 6 engaged by latch 4 and connected to main mold-blade section 2, through cross-pin 7; and actuator 8 deriving motion from and controlled by the centering pin by which the selected matrix is clamped upon the mold to release latch 4 and advance cut-off section 3 when the centering pin engages and is arrested by the quad matrix.

As fully shown in Patent No. 962,411, to which reference has been made and as indicated in the accompanying drawings, latch 4 and cut-off mold-blade section 3 are mounted upon a carrier movable in guides on the mold, with the hooked end of the latch in position to engage a shoulder on actuating head 6 when the casting faces of the mold-blade sections are in alinement. The mov-

able abutment slide 5 is under the direct control of the mold adjusting mechanism and is located in position to intercept and arrest main mold blade section 2 as the latter is withdrawn by actuating head 6 through cross-pin 7 to dimension the mold to correspond with the adjusted position of said abutment slide or the portion thereof contacting with mold-blade section 2. In addition to the adjusting movements thus transmitted to the abutment slide the part against which the main section of the mold-blade abuts is adjustably attached to the abutment slide, as by being threaded therein as indicated in Fig. 1.

As a matter of structural accommodation actuator 8 does not contact directly with latch 4 but is connected therewith through a transmitting member in the form of a bell-crank lever 10 pivotally supported at 11 with one arm lying across the path and in rear of latch 4.

Heretofore the actuator 8 engaged the other arm of lever 10, but in the present instance is connected therewith through adjusting means under the control of the abutment slide and adapted to vary the length of the transmission devices and thereby vary the timing of the actuator with relation to the setting of the mold blade.

In the preferred form of embodiment of the principle, illustrated in Figs. 1 and 2, the adjustable connection between actuator 8 and transmitting lever 10 comprises a contact member for the actuator, represented by lever 12, and an intermediate adjusting member or lever 13. Lever 13 is pivotally connected at one end to the arm of transmission lever 10 and its opposite end contacts with a movable fulcrum 14, the latter formed upon one arm of a bell crank lever 15 whose opposite arm engages a shoulder 16 on the abutment slide 5.

Levers 12 and 13 are connected by a link or links 17 at points intermediate the power end and fulcrum, and a spring 18 coupled with lever 10 operates to retract the latter until arrested by the contact of lever 12 with the actuator, at the same time tilting lever 13 to retract its fulcrum until the latter is arrested by the contact of lever 15 with its seat on abutment slide 5. In this arrangement lever 12 performs the dual function of transmitting motion from actuator 8 to latch 4, and of automatically adjusting the length of the transmitting devices to correspond with the position of the abutment slide 5. The length of the transmitting devices, *i. e.*, the distance from the actuator contact on lever 13 to the latch contact on lever 10, varies with the angular position of lever 13 in relation to connected levers 12 and 10, and as said angular position is determined by fulcrum 14 under the direct control of the abutment slide 5



through lever 15, it follows that the length of said transmitting devices will vary with the position of said abutment slide. The arrangement is such that in proportion as the abutment slide is advanced to dimension the mold the transmitting devices will be automatically expanded so that when the unlatching movement of actuator 8 takes place lever 10 will be in position to engage and withdraw the latch before the mold blade seats upon the abutment slide.

It is obvious that without departing from the spirit of the present invention the same may be embodied in other and different forms of transmitting devices or mechanism by providing the same with adjusting means under the control of the abutment slide for varying the length of said transmitting devices or the position of the latch actuating member thereof. One such embodiment is shown by way of illustration, in Fig. 3, wherein an adjusting member in the form of a wedge 20 interposed between the power end of lever 10 and actuator 8 is pivotally connected to reciprocate in unison with abutment slide 5. As the abutment slide is advanced to dimension the mold for the smaller type the thicker portion of the wedge 20 will be brought between the actuator and transmitting lever, thereby correspondingly advancing the latch engaging point of lever 10, and when the abutment slide is retracted a narrower section of the wedge will be interposed and lever 10 correspondingly retracted.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent of the United States is—

1. In an actuating mechanism for low quad type molds, the combination of the following elements, to-wit; a type mold provided with cut-off and main mold blade sections and a latch carried by the cut-off section; actuating and adjusting devices for the mold blade sections including a movable abutment and an actuating head the latter carrying a cross-pin engaging the main mold-blade section, and adapted to be engaged by the cut-off mold blade section latch; an actuator for the latch; and transmitting devices intermediate said actuator and latch provided with adjusting means controlled by the abutment.

2. In a type casting machine, the combination of the following elements, to-wit; an adjustable abutment; an actuating head; a mold provided with a divided or sectional mold blade, and a latch for detachably coupling one section to the actuating head; and a matrix centering pin controlled actuator for the latch including transmitting devices and adjusting-means controlled by the abutment to vary the length of said transmitting devices to correspond with the position of said abutment.

3. In a low quad mold actuating mechanism, the combination of the following elements, to-wit; a dimensioning abutment; a mold provided with a divided mold blade; an actuating head for the mold blade; a latch reciprocating in unison with one mold blade section and engaging said actuating head; an actuator for said latch; and transmitting devices intermediate said actuator and latch including adjusting means coupled with and controlled by the dimensioning abutment.

4. A low quad mold actuating mechanism including in combination the following elements, to-wit; an actuator for the cut-off section of the mold blade; an actuating head coupled with the main mold blade section and detachably connected to the cut-off section through a latch, the latter reciprocating in unison with said cut-off section; an admeasuring abutment engaged by the main mold blade section to dimension the mold cavity; and variable transmitting devices coupled with and controlled by said admeasuring abutment for communicating motion from the actuator to the latch.

5. In a type casting machine provided with a sectional mold blade; abutment slide, actuating head, latch carried by cut-off mold blade section and engaging the actuating head, a latch actuator and transmitting devices intermediate said actuator and latch, and in combination therewith, means for automatically varying the effective length of said transmitting devices.

6. In a type casting machine provided with a sectional mold blade, abutment slide, actuating head, latch carried by cut-off mold section and engaging said actuating head, and latch actuator and in combination therewith, transmitting devices intermediate the latch and its actuator the same including an actuator engaging lever, a latch engaging lever, and an intermediate connecting lever serving both as a transmitting and an adjusting member.

7. In a type casting machine provided with sectional mold blade, adjustable abutment, actuating head, and latch carried by the cut-off section of the mold-blade for engaging said actuating head, and in combination therewith, an automatically adjustable or variable transmitting mechanism intermediate the latch and its actuator, the same including an actuator-engaged lever, a latch engaging lever, and an intermediate transmitting and adjusting lever, the latter provided with a movable fulcrum coupled with and controlled by the abutment slide.

8. In a type casting machine the combination of the following elements, to-wit; a mold provided with a sectional mold blade; an adjustable mold-blade abutment; an actuating head coupled with the main mold blade section; a latch carried by the cut-off



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mold-blade section and engaging the actuating head; an actuator for the latch; and an automatically adjustable or variable transmitting mechanism intermediate the latch  
5 and its actuator the same including a latch engaging lever, an actuator engaging lever, an intermediate lever pivotally coupled with both said levers and fulcrumed upon a fourth

lever, the latter coupled to move in unison with the mold-blade abutment.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

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