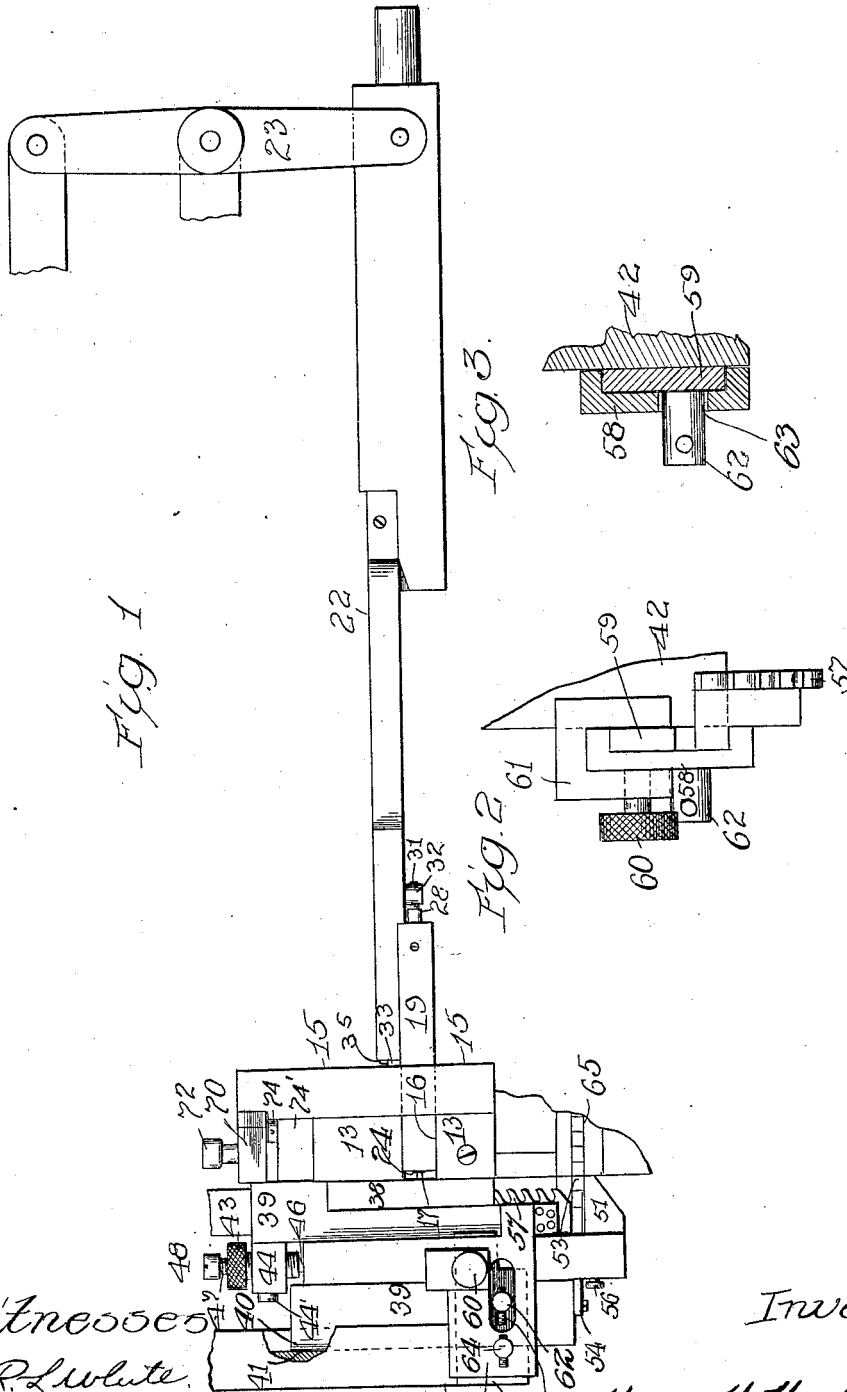


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 MOLD FOR AUTOMATIC TYPE CASTING MACHINES.  
 APPLICATION FILED JULY 6, 1909.

954,028.

Patented Apr. 5, 1910.

3 SHEETS—SHEET 1.



Witnesses  
 H. R. L. White  
 M. A. Kiddie

Inventor

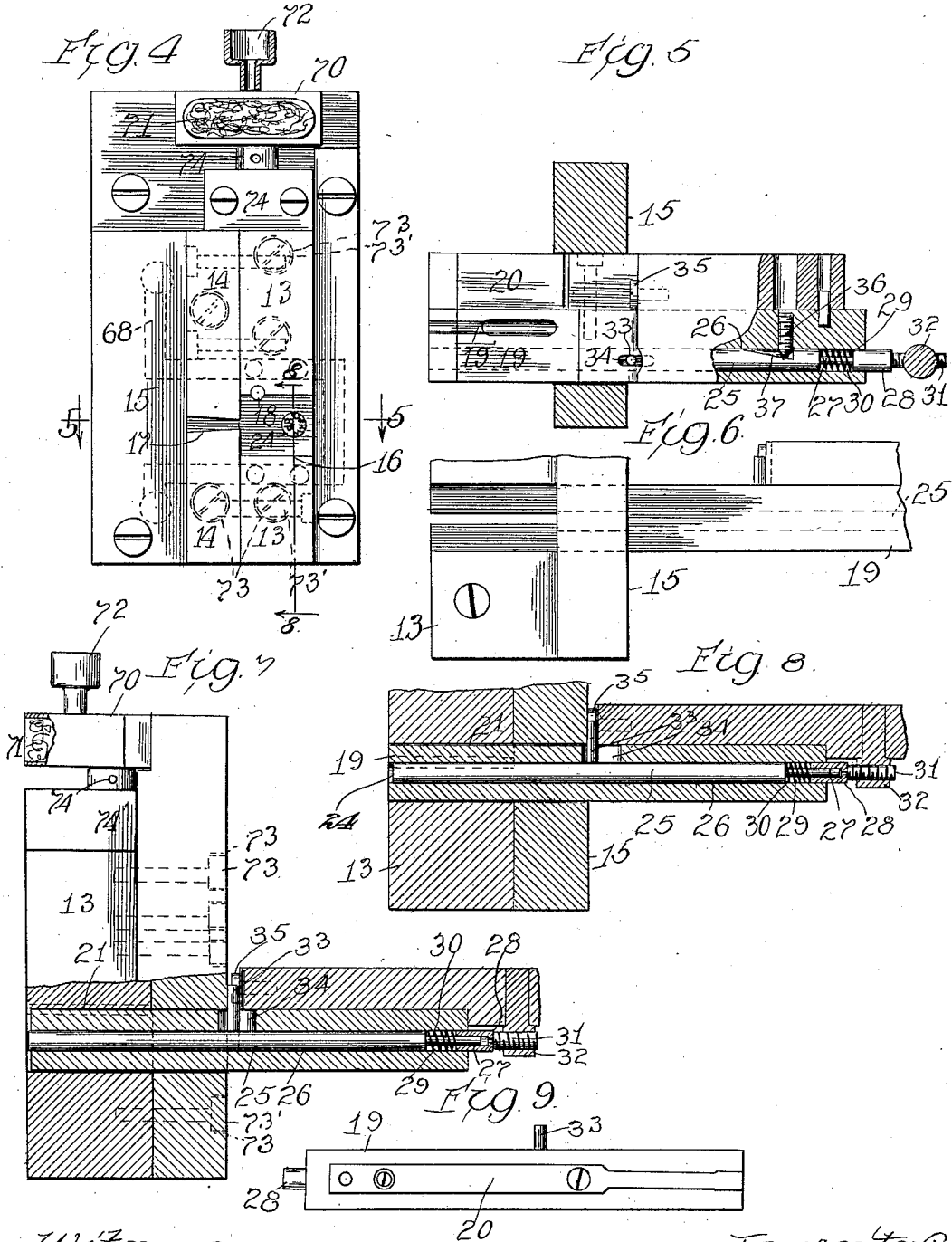
Henry H. Hardinge  
 By Litchman, Bell & Fuller Attys

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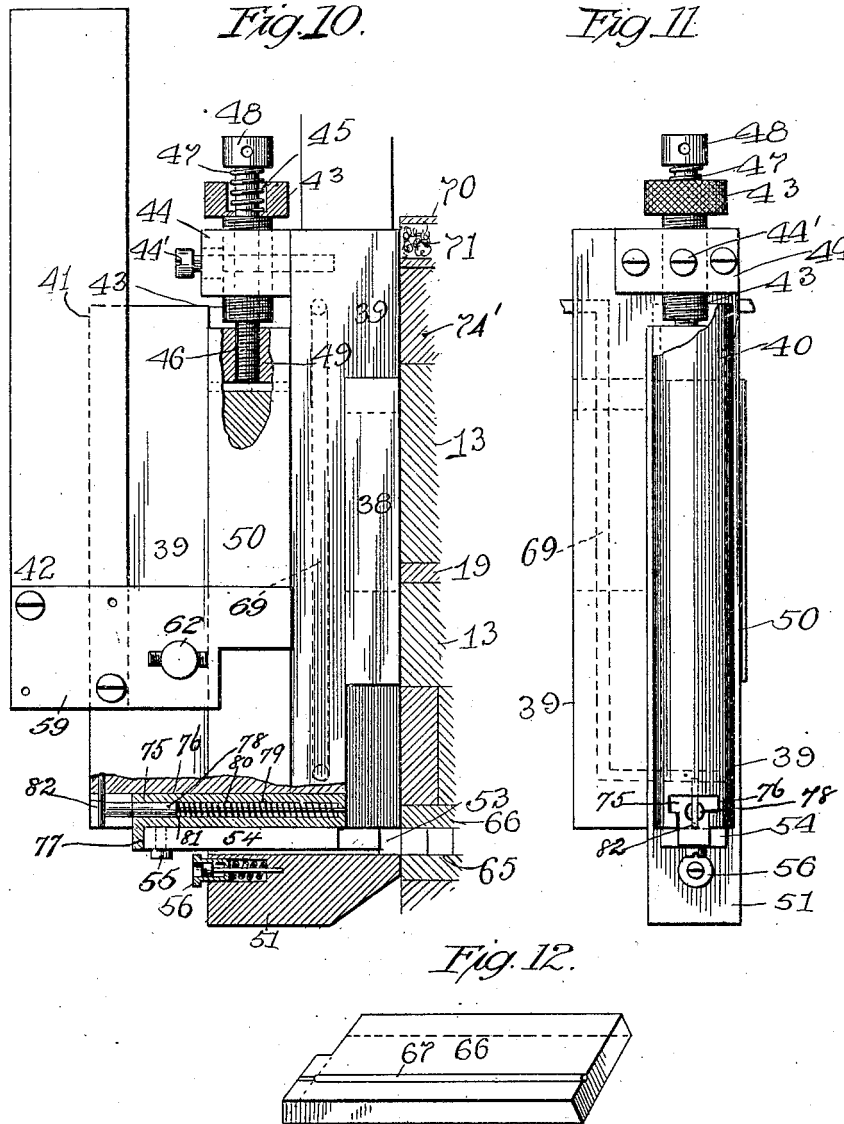
Henry H. Hardinge  
By Lithium Belt + Fuller  
Attys

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3 SHEETS—SHEET 3.



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H. R. L. White  
M. A. Nipper

Inventor  
Henry H. Hardinge  
By Lithicum Belt & Fuller  
Att'y's

# UNITED STATES PATENT OFFICE.

HENRY H. HARDINGE, OF CHICAGO, ILLINOIS, ASSIGNOR TO WIEBKING, HARDINGE & CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MOLD FOR AUTOMATIC TYPE-CASTING MACHINES.

954,028.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed July 6, 1909. Serial No. 506,142.

To all whom it may concern:

Be it known that I, HENRY H. HARDINGE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Molds for Automatic Type-Casting Machines, of which the following is a specification.

The primary object of this invention is to provide a type cast in an automatic type casting machine and at the time it is cast with a pin mark embodying any desired type or other characters.

Another object of the invention is to provide for retracting the pin mark die after the type has been cast to permit the discharge of the type and to clear the mold cover during the discharge operation. And a further object of the invention is to support the shoulder of the type on the mold cover guide and with means for readily adjusting it for type of different sizes.

In the accompanying drawings illustrating the invention Figure 1 is a front elevation, partly broken away and in section, illustrating my invention. Fig. 2 is an enlarged detail view showing the knife and means for supporting the same. Fig. 3 is an enlarged sectional view on the line 3—3 of Fig. 1. Fig. 4 is a side elevation of the mold without the cover. Fig. 5 is a sectional view on the line 5—5 of Fig. 4. Fig. 6 is a detail view to show the position of the mold body during the casting operation. Fig. 7 is a sectional view illustrating the position of the mold body and the pin mark die just before the mold body has completed the type discharging movement. Fig. 8 is a sectional view on line 8—8 Fig. 4 showing the position of the mold body and the pin mark die at the completion of the type discharging movement of the mold body. Fig. 9 is a detail rear view of the mold body. Fig. 10 is a front elevation, partly in section, of the mold cover and parts associated therewith. Fig. 11 is an elevation, parts being broken away, of the parts shown in Fig. 10 looking at the left thereof and with the guide removed. Fig. 12 is an inverted perspective view of the receiving end of the roof of the type channel.

Referring to the drawings, the cheeks 13 and the jet blocks 14 are fastened to the mold base 15 to form the space 16 for the type and the space 17 for the jet (Fig. 4).

The cheek 13 is provided with one or more nick pins 18 to form the nicks in the type.

The mold body 19 carries a jet body 20 and reciprocates in an opening 21 in the mold base. The mold body projects through the back of the base and is fastened to a slide bar 22 which is reciprocated by a lever 23, (Fig. 1). The mold body is provided at the top thereof with a slot 19' to receive the nick pin during the type discharging movement of the mold body (Fig. 5).

The pin mark die 24 (Fig. 4) is formed on the end of a drill rod 25 slidably arranged in a bore 26 in a mold body. This drill rod is reduced at its rear end 27 and carries a cap 28. A spring 29 is arranged on the reduced end 27 between the cap 28 and the shoulder 30. An adjusting screw 31 is arranged in a post 32 on the slide bar 22 to bear against the outer end of the cap 28. A pin 33 is made fast to the rod 25 and projects upward through a slot 34 in the mold body to engage the mold base 15. An adjustable stop 35 is arranged in the end of the slide bar 22 to engage the mold base and limit the forward discharge movement of the mold body. A screw 36 is arranged in the slide bar and projects into the bore 26 to engage a recess 37 in the rod 25. These parts are adjusted so that in the normal position of the body block ready for the casting operation (Fig. 6) the spring 29 presses the drill rod forward with the die on the end thereof projecting into the type space 16 to make the impression of the pin mark in the type when it is cast.

The spring 29 presses the pin mark die rod 25 forward under a tension which is governed by the adjustment of the screw 31 and the screw 36 limits the forward movement of this rod. When the die projects into the type space, as just described, the pin 33 projects upward in front of the screw 35 (Fig. 5). The rod 25 moves forward with the mold body to eject the type from the mold base and this movement of the mold body is limited by the engagement of the adjusting stop screw 35 with the mold base. Just before this screw 35 engages the mold base the pin engages the mold base to limit the forward movement of the rod 25 and thus the rod 25 is stopped in its forward movement before the forward movement of the body block is completed and, in effect, the

rod 25 is retracted to withdraw the die from engagement with the type so that the type can be discharged. The parts are adjusted so that when the body block reaches  
 5 the limit of its forward movement it will lie flush with the face of the cheeks or body blocks 13 but the pin mark die at the end of the rod 25 will lie below the face of the cheeks or body blocks and the mold body  
 10 (Fig. 8). Thus the pin mark die is clear of the mold cover which carries the type away from the mold body as hereafter described and the latter can operate in its reciprocating movement without touching the  
 15 pin mark die.

The mold cover comprises a cover plate 38 mounted on a carrier 39 which is reciprocated vertically by any suitable means to receive and discharge the type. The carrier is rounded at 40 and it is seated in a complementary socket 41 of the guide 42. An adjusting screw 43 operates in a block 44 rigidly secured to the carrier and the head of this screw has a recess 45. A lock screw  
 20 44' operates in the block 44 against the adjusting screw 43 to lock said screw after it has been set. The shank of the screw 43 is bored to receive a bolt 46 and a spring 47 is arranged in the recess 45 beneath the head  
 25 48 on the bolt 46. The bolt 46 is screwed into a cross piece 49 which is connected by strap plates 50 with a clamping head 51 below the carrier, the cross piece, straps and clamping head comprising a clamping frame guided  
 30 on and movable relative to the carrier. The spring 47 operates the clamping head to clamp a type 53 between itself and the carrier during the downward discharge movement of the carrier. An ejector 54 is arranged  
 35 beneath the carrier 39 and above the clamping head and between the straps 50, and a stud or stop 55 on the ejector is arranged to engage a spring buffer 56 on the clamping head. The knife 57 (Figs. 1, 2)  
 40 is carried by a channel plate 58 which is slidably mounted on a support 59 fastened rigidly to the lower end of guide 42. The plate is securely fastened in adjusted position on the support by a lock screw 60 which  
 45 is carried by a channel clamp 61 fitting over the plate and support and through one leg of which the screw operates to engage the plate. A gage 62 on the support projects outward through a slot 63 in the plate and is  
 50 arranged opposite a gage 64 on the plate.

To adjust the knife for the type to be cast the lock screw is loosened and the plate adjusted relative to the support so that a type of the proper size will fit snugly between the  
 55 gages after which the lock screw is tightened. Since the lock screw and the plate adjusting mechanism are located at the side of the machine entirely out of the path of any of the moving parts of the mechanism,  
 60 this adjustment of the knife may be accom-

plished during the normal operation of the machine.

The mold body, mold cover and carrier and the ejector may be operated as set forth in my Patent No. 926,740 dated July 6, 1909  
 70 or in any other manner and by any suitable means. After the type has been cast the carrier rises above the type so that the mold body on its forward discharge movement may push the type into place between the  
 75 clamping head and the carrier. When the carrier descends to the discharge position (Fig. 10) the ejector is actuated by any suitable means to push the type 53 into the type channel 65 where it is shaved by knives,  
 80 (not shown). The roof or top 66 of this channel has a pin 67 to fit the nick in the type and guide the type in the channel (Fig. 12). After the type is discharged the spring 47 pulls the clamping frame upward relative to  
 85 the carrier until the cross piece 49 engages the screw 43. When the carrier rises the head 48 of screw 46 engages a stop on the frame of the machine which arrests the movement of the clamping frame while  
 90 the carrier continues to rise a little farther. This opens the clamping jaw to receive the type discharged by the mold body.

To reduce the heat of the parts during the casting operation I prefer to provide  
 95 for a water circulation in the mold base and cover and I have shown passages 68 in the mold base (Fig. 4) and passages 69 in the mold cover (Figs. 10, 11). These passages may be variously arranged and a  
 100 water circulation maintained therein in any suitable manner. A box 70 on the mold base carries a felt pad 71 saturated with oil to lubricate the mold cover. The oil is fed to the pad through a cup 72. The upper  
 105 cheek or nick body block 13 is provided with enlarged screw holes 73 to receive the screws 73' which secure the cheek to the mold base 15, and an adjusting screw 74 operates in a block 74' and bears upon said cheek. By  
 110 adjusting this screw 74 the upper cheek or nick body block may be adjusted to the exact size of the type.

My invention provides for producing a pin mark in each type as it is cast in an auto-  
 115 matic type casting machine, and by making the pin mark die movable conjointly with and relatively to the mold body and stopping the forward movement of the die before the mold body reaches the limit of its  
 120 forward movement to position flush with the face of the cheeks, the die is wholly disengaged from the type and protected from the mold cover when the carrier moves the type down in the discharging operation. There-  
 125 fore a die may be employed to impress a trade mark, a name, initials or other identifying or designating characters in the type, and this serves to indicate the origin, or the ownership, of the type as may be desired. 130

The knife 57 is conveniently supported on the carrier guide and its adjustment may be quickly, easily and accurately accomplished. The rounded surface engagement between the carrier and guide provides for a perfect adjustment of parts and a smooth and easy movement of the carrier relative to the guide.

The ejector is projected forward to engage the type and prevent it from becoming disarranged while passing from the mold space to the delivery channel and particularly while passing the knife. This is accomplished by means of a T-shaped spring pressed slide 75 which operates in a correspondingly shaped groove 76 in the carrier (Figs. 10, 11). The slide has a depending lug 77 which engages the rear end of the ejector. A rod 78 is arranged in a bore 79 in the slide and a spring 80 is confined on the rod between a shoulder 81 and the end of the bore. The spring acts on the rod to project the slide forward and the lug on the slide engages the ejector and pushes it forward against the type. Thus the type is securely held between the clamping head and the carrier and between the ejector and the parts on the mold base while it is being delivered to the type channel and especially while it is being shaved by the knife. A pin 82 on the carrier engages the rear end of the rod 78 to hold it in place in the bore.

What I claim and desire to secure by Letters Patent is:

1. In a mold for an automatic type casting machine, the combination of a pin mark die, and a mold body movable relatively to said pin mark die.

2. In a mold for an automatic type casting machine, the combination of a movable pin mark die, and a mold body movable conjointly with and relatively to said pin mark die.

3. In a mold for an automatic type casting machine, the combination of a mold body having a bore therein and a pin mark die movable in said bore.

4. In a mold for an automatic type casting machine, the combination of a movable mold body having a bore therein, and a pin mark die movable in said bore, said mold body being movable conjointly with and relatively to said pin mark die.

5. In a mold for an automatic type casting machine, the combination of a mold base, mold cheeks, a mold body movable through the base and between the cheeks to discharge the type and having a bore therein, a pin mark die movable in said bore, and means for stopping the forward movement of the pin mark die before the mold body has reached the limit of its forward movement.

6. In a mold for an automatic type casting machine, the combination of a mold base, mold cheeks, a mold body movable

through the base and between the cheeks to discharge the type and having a bore and slot therein, a pin mark die, a rod carrying the die and movable in said bore, and a pin on the rod projecting through the slot to engage the mold base and stop the forward movement of the pin mark die.

7. In a mold for an automatic type casting machine, the combination of a mold base, mold cheeks, a mold body movable through the base and between the cheeks to discharge the type and having a bore and a slot therein, a pin mark die, a rod carrying the die and movable in said bore, a pin on the rod projecting through the slot to engage the mold base and stop the forward movement of the pin mark die, and a stop on the mold body to engage the base and stop the forward movement of the mold body after the pin mark die has stopped.

8. In a mold for an automatic type casting machine, the combination of a mold body having a bore therein, and a spring-pressed pin mark die movable in said bore.

9. In a mold for an automatic type casting machine, the combination of a mold body having a bore therein, a pin mark die movable in said bore, and a yielding buffer between the mold body and the pin mark die.

10. In a mold for an automatic type casting machine, the combination of a mold base, mold cheeks, a mold body movable through the base and between the cheeks to discharge the type and having a bore and a slot therein, a pin mark die, a rod carrying the die and movable in said bore, a stop on the mold body to engage the mold base, yielding means operating on the rod to push the pin mark die beyond the mold body, said mold body and pin mark die rod being conjointly and relatively movable, and means on the rod to engage the mold base to stop the forward movement of the rod before the stop engages the mold base to stop the mold body.

11. In a mold for an automatic type casting machine, the combination of a carrier, a mold cover mounted on the carrier, and a guide for the carrier, said carrier having a rounded surface and said guide having a concave surface complementary to the rounded surface to receive the same.

12. In a mold for an automatic type casting machine, the combination of a carrier, a mold cover mounted on the carrier, a guide for the carrier, and a knife for shaving the type supported on the guide beneath the carrier.

13. In a mold for an automatic type casting machine, the combination of a carrier, a mold cover mounted on the carrier, a guide for the carrier, a support on the guide, a knife, a plate carrying the knife, and a device for clamping the plate in adjusted position on the support.

14. In a mold for an automatic type casting machine, the combination of a carrier, a mold cover mounted on the carrier, a guide for the carrier, a support on the guide, a knife, a channel plate carrying the knife and adjusted on the support, a channel clamp fitting on the support and plate, and a lock screw to fasten the support, plate and clamp together.
15. In a mold for an automatic type casting machine, the combination of a mold cover, a carrier for the mold cover, a movable ejector, a clamping head, and means yieldingly pressing the ejector forward to engage the type.
16. In a mold for an automatic type casting machine, the combination of a carrier, a mold cover mounted on the carrier, a guide for the carrier, a knife mounted on said carrier, and means for adjustably positioning said knife on said carrier, whereby the knife may be adjusted while the machine is in operation, said means comprising a plate to which said knife is secured, and a locking screw adapted to hold said knife in adjusted position.
17. In a mold for an automatic type casting machine, the combination of a carrier, a mold cover mounted on the carrier, a guide for the carrier, a knife, a plate to which said knife is secured, means for adjustably securing said plate on said carrier, whereby the knife is capable of adjustment, and a gage for determining the adjusted position of said knife.

HENRY H. HARDINGE.

Witnesses:

M. A. KIDDIE,  
Wm. O. BELT.