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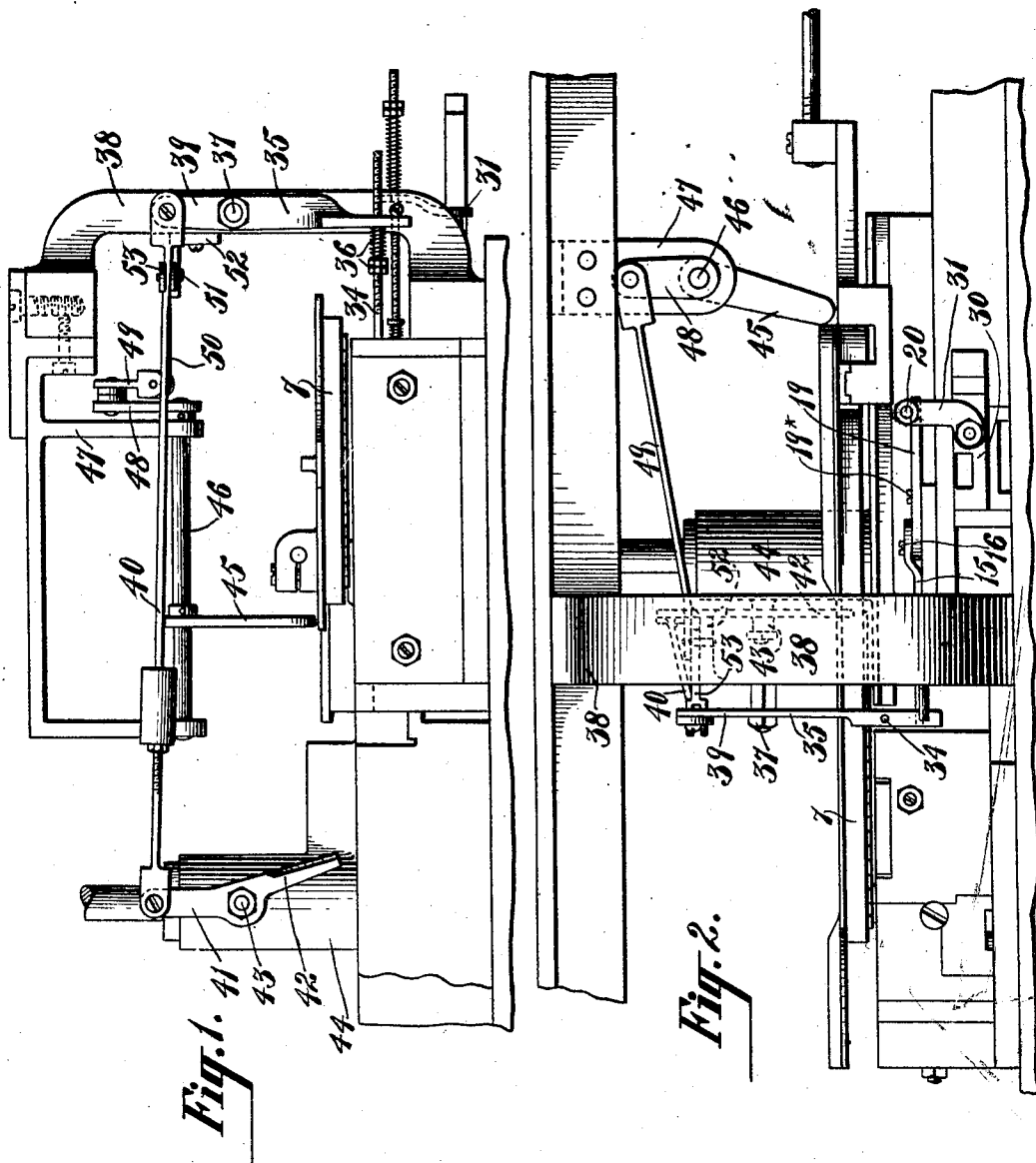
PATENTED MAR. 26, 1907.

R. DRUMMOND & W. C. LIEBERKNECHT.

TYPE CASTING MACHINE.

APPLICATION FILED OCT. 31, 1903.

3 SHEETS—SHEET 1.



Witnesses:

F. L. Hachenburg.

Henry Thome.

Inventors:

Robert Drummond and
Wm. C. Lieberknecht
by attorney *Howard Swann*

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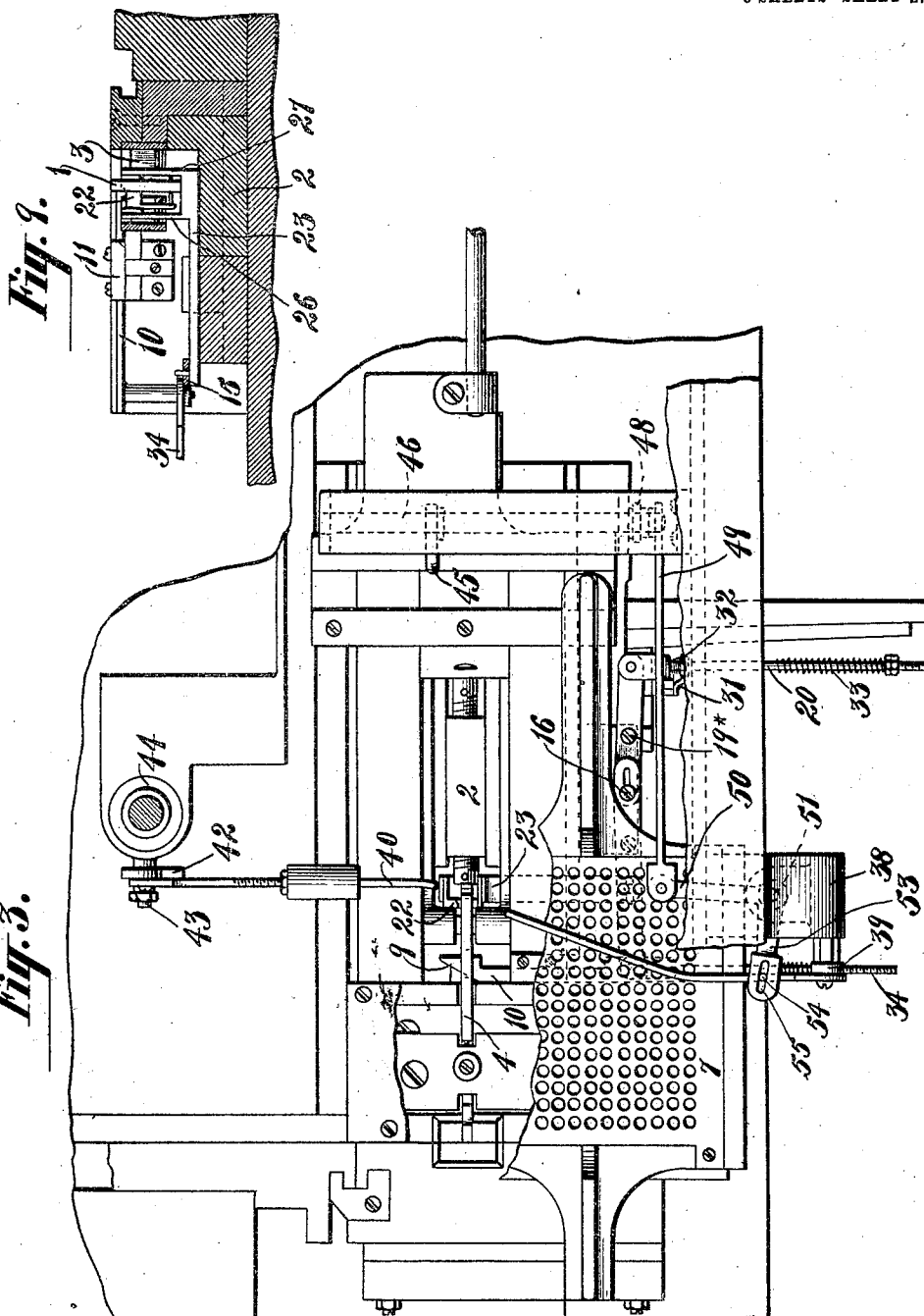
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3 SHEETS—SHEET 2.



Witnesses:

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3 SHEETS—SHEET 3.

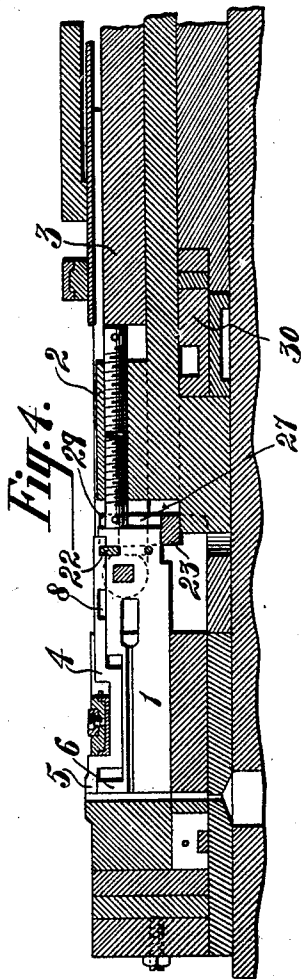
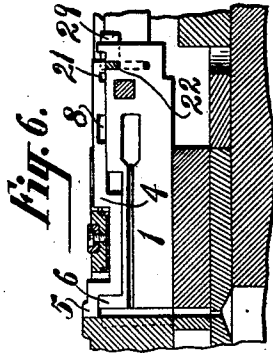


Fig. 1.

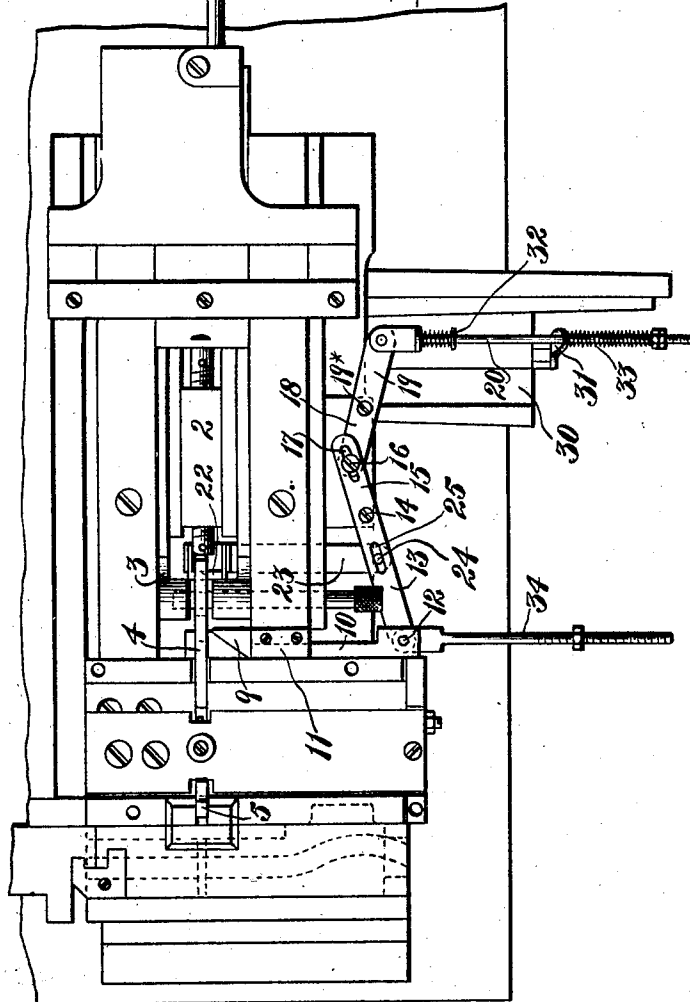
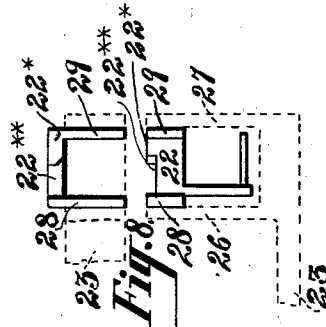


Fig. 5.

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UNITED STATES PATENT OFFICE.

ROBERT DRUMMOND AND WILLIAM C. LIEBERKNECHT, OF NEW YORK, N. Y.;
SAID LIEBERKNECHT ASSIGNOR TO SAID DRUMMOND.

TYPE-CASTING MACHINE.

No. 848,352.

Specification of Letters Patent.

Patented March 26, 1907.

Application filed October 31, 1903. Serial No. 179,290.

To all whom it may concern:

Be it known that we, ROBERT DRUMMOND and WILLIAM C. LIEBERKNECHT, citizens of the United States, and residents, respectively, of the borough of Brooklyn and of the borough of Manhattan, both in the city and State of New York, have invented a new and useful Improvement in Type-Casting Machines, of which the following is a specification.

This invention relates to an improvement in type-casting machines, and is particularly directed to means for making low quads and spaces, with the object in view of permitting the use of the type cast by the machine for printing purposes without danger of the quads and spaces coming in contact with the printed surface.

A practical embodiment of our invention is represented in the accompanying drawings, in which—

Figure 1 is a view in front elevation of a portion of a type-casting machine of well-known and approved construction with our device for making low quads and spaces applied thereto. Fig. 2 is a view in side elevation of the same. Fig. 3 is a top plan view with certain of the parts broken away to more clearly show the parts beneath them, the device for making the low spaces being in its closed position. Fig. 4 is a vertical section through the machine in the plane of the blade, showing the device for making the low spaces in its open position. Fig. 5 is a top plan view of the same. Fig. 6 is a detail vertical section in the plane of the blade, showing the parts in the position shown in Fig. 3. Fig. 7 is a detail view showing the type, the en-quad, the em-quad, and the justification space or blank. Fig. 8 shows the lock for the auxiliary blade in top plan and face views, and Fig. 9 is a transverse vertical section taken in the plane of the lock for the auxiliary blade.

The main blade (denoted by 1) for determining the width of the body of the type, quad, or space is operated in the well-known manner by the sliding bars 2 and 3.

The blade 1 is surmounted by an auxiliary blade 4, which is permitted a slight longitudinal sliding movement thereon at predetermined intervals for opening and closing the top of the mold.

The forward end 5 of the auxiliary blade 4 overlaps the forward end 6 of the main blade a short distance below the face of the movable matrix-case 7, so that when the auxiliary blade is moved to close the top of the mold the metal within the mold will be stopped a corresponding space from the face of the matrix-case to form a low quad or space.

When the auxiliary blade 4 is at the limit of its rearward movement with respect to the blade 1, the face of its forward end 5 will be in alinement with the face of the forward end 6 of the main blade, thus permitting the metal within the mold to flow into engagement with the type on the face of the movable matrix-case 7.

The mechanism which we employ for operating the auxiliary blade at predetermined intervals independent of the operation of the main blade to form low quads and spaces for the different spaces—viz., the en-quad, the em-quad, or the justification-space—is as follows: The auxiliary blade 4 is provided with a recess 8. A cam 9, carried by the bar 10, fitted to slide in a suitable bearing 11, is arranged in position to enter the recess 8 at predetermined intervals for sliding the auxiliary blade forward independently of the main blade 1.

The cam-bar 10 is connected at 12 to one arm 13 of a two-armed lever pivoted at 14 to swing horizontally, the other arm 15 of the said lever having a pin-and-slot connection 16 17 with an arm 18 of a second two-armed lever pivoted at 19* to swing horizontally, the other arm 19 of the last-named two-armed lever carrying a laterally-extended controlling-bar 20.

The movable blade 4 is provided with a recess 21, which is engaged and disengaged by a laterally-sliding lock 22, carried by the main blade 1. The movement of this lock 22 is controlled by the movement of the rocking lever 13 15, as follows: A laterally-sliding bar 23 has its outer end provided with a pin-and-slot connection 24 25 with the arm 13 of the rocking lever 13 15. The inner end of this laterally-sliding bar 23 is provided with two upwardly-extended arms 26 27, which engage the outer faces of the rearwardly-extended arms 28 29 of the lock 22. This connection between the lock and the

controlling-bar permits the lock to move with the main blade 1 without disconnecting the said lock and bar.

The lock 22 has a raised portion or lip 22*, fitted to slide into and out of the recess 21 in the under side of the movable blade 4, and a depressed portion 22**, adjacent to the lip 22*, on or over which depressed portion the blade 4 may freely move in a longitudinal direction when the lock 22 is moved laterally to disengage the lip 22* from the recess 21.

The mechanism for operating the movable blade 4 to form the quads or the justification-spaces is as follows: The wedge 30, which is operated and which controls the movement of the main blade 1 in the usual manner to form the proper mold-slot for the justification-space, is also provided with a lug 31, which embraces the controlling-bar 20 of the rocking lever 18 19. As the wedge is moved inwardly laterally with respect to the mold-blades the lug 31 will engage the yielding stop 32, and as the wedge completes its inward movement the two rocking levers 18 19 and 13 15 will be rocked in a direction to slide the cam 9 into the recess in the movable blade 4 for sliding the blade into position to close the top of the mold-slot at a distance from the type on the face of the matrix-case. Before the cam 9 is moved a sufficient distance to slide the movable blade 4 forward the lock 22 is withdrawn from the recess 21 in the movable blade through the controlling-bar 23.

It is to be understood that the blade 1 is operated in the usual manner by the sliding bars 2 and 3 to first bring it into position to form the space of the required thickness and is then moved toward the mold-slot for forcing the space after it has been formed out of the mold-slot. This last forward movement of the blade 1 will bring the lock 22 opposite the recess 21 on the movable blade, so that as the wedge 30 is moved laterally outward it will, through the engagement of the lug 31 with the yielding stop 33 on the bar 20, rock the two levers 18 19 and 13 15 back to their normal position and draw the lock 22 into the recess. This same movement will also withdraw the cam 9 from the recess 8 of the movable blade, thus permitting the two blades to be drawn back to their normal position by the usual mechanism for withdrawing the blade 1.

The means which we have shown for sliding the movable blade 4 forward independently of the blade 1 to form a low quad of a different thickness than the justification-space—as, for instance, the em-quad—is as follows: The rocking lever 13 15 is provided with a laterally-extended controlling-rod 34. The lever-arm 35 engages a yielding stop 36 on the rod 34, which lever is hinged to swing vertically on a pivot 37, carried by a support

38 of the machine. The upper arm 39 of this lever is connected through a rod 40 with the upper arm 41 of a two-armed rocking lever 41 42, pivoted at 43 to another support 44 on the machine. The lower arm 42 of the two-armed rocking lever 41 42 is located in position to be engaged by the matrix-case 7 when the matrix-case has been moved to the required point by the controlling mechanism for causing the em-quad to be formed. The engagement of the matrix-case 7 with the said arm 42 will, through the connections above described, cause the horizontal rocking levers 13 15 and 18 19 to be rocked into position to unlock the movable blade 4 and slide it forward to close the upper end of the mold-slot, as hereinbefore described. This movement will also compress the spring of the yielding stop 33 against the lug 31 of the wedge 30 because of the rocking movement of the lever 18 19, so that when the case 7 is withdrawn from its engagement with the arm 42 the parts will be returned to their normal position by the extension of the spring-yielding stop 33 when it is permitted to exert its force.

The means which we have shown for sliding the movable blade 4 forward independently of the blade 1 to form a low space of still another thickness—as, for instance, for forming an en-quad—is as follows: A two-armed lever has its lower arm 45 fixed to a rock-shaft 46, carried by a bracket 47, secured to the support 38, which arm 45 is extended down into position to be engaged by the matrix-case 7 when the matrix-case is moved to a predetermined point by the controlling mechanism for permitting the en-quad to be formed. The upper arm 48 of this lever is also fixed to the shaft 46 and is connected by a rod 49 with one arm 50 of an angle-lever pivoted at 51 to a bracket 52, carried by the support 38, the other arm 53 of the said angle-lever having a pin-and-slot connection 54 55 with the connecting-rod 40, hereinbefore described.

The rocking levers 13 15 and 18 19, and thereby the lock 22 and cam 9, are operated through the rocking lever 35 39 and rod 34 in a manner similar to that described with reference to the means for controlling the making of the em-quad.

By the mechanism herein described we are enabled to form quads and spaces the faces of which will be spaced a considerable distance from the faces of the type without interfering with the operation of the machine in any particular.

It is evident that mechanism other than that herein shown and described might be employed for operating the movable blade for forming the low quads and spaces. Hence we do not wish to limit ourselves strictly to the structure herein set forth; but

What we claim is—

1. In a type-casting machine, a matrix, a mold having its slot leading to the face of the matrix, main and auxiliary blades, a wedge
5 for operating the blades to determine the width of the slot, means for operating the blades to form a low quad or space, of a pre-determined width, comprising a lock, a cam, a rocking lever controlling the movements
10 thereof, a second rocking lever connected to the first-named rocking lever and a wedge connected to the second rocking lever.

2. In a type-mold such as described provided with a divided mold-blade and in combination therewith a latch mounted upon one
15

mold-blade section in position to engage a shoulder on the other section when their casting faces are in alignment, and an actuating connection or cross-pin coupled with one section.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 28th day of October, 1903. 20

ROBERT DRUMMOND.
WILLIAM C. LIEBERKNECHT.

Witnesses:

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CHAS. H. CLAIBORN.