K. SUGIMOTO.

TYPE CASTING MACHINE.

APPLICATION FILED MAR. 23, 1920.

1,364,593. Patented Jan. 4, 1921.

Fig. 1.

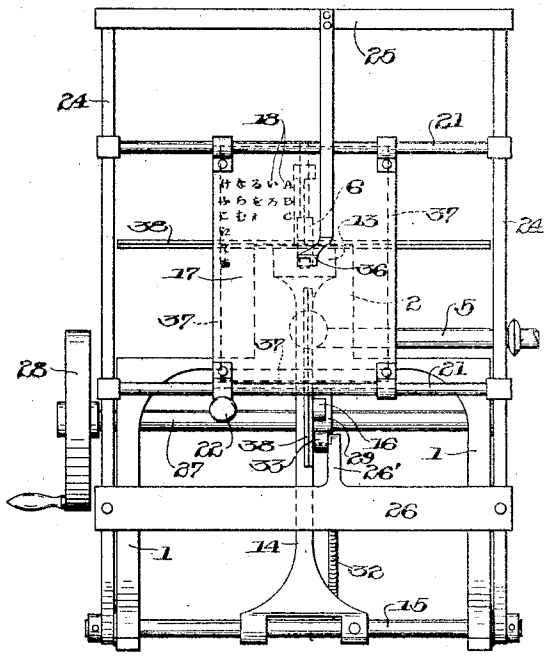


Fig. 2.

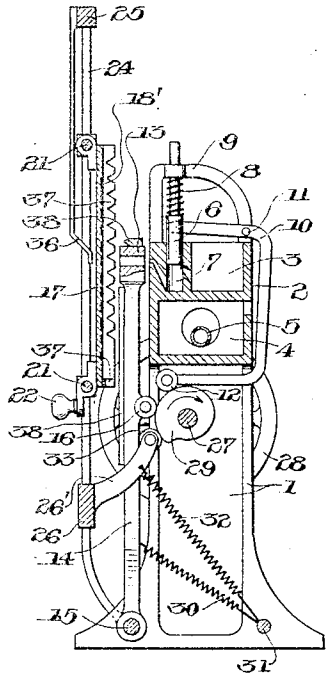
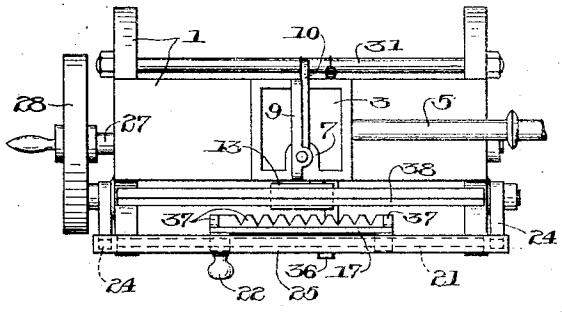


Fig. 3.



INVENTOR;
Kyota Sugimoto
Wm Wallace White
ATTY.

# UNITED STATES PATENT OFFICE.

KYOTA SUGIMOTO, OF TOKYO, JAPAN.

## TYPE-CASTING MACHINE.

1,364,593. Specification of Letters Patent. Patented Jan. 4, 1921.

Application filed March 23, 1920. Serial No. 368,022.

*To all whom it may concern:*

Be it known that I, KYOTA SUGIMOTO, subject of Japan, residing at No. 13, Toyooka Machi, Mita, Shiba Ku, Tokyo, Japan, have invented new and useful Improvements in Type-Casting Machines, of which the following is a specification.

This invention relates to improvements in type casting machines, consisting of a board having a large number of matrices of different characters arranged on one of its surfaces, means to move the said matrix board, right and left, up and down, and means to make any desired matrix to fit to the mold. The object of this invention is to obtain a machine by which types for multiform characters can be cast with great rapidity.

The accompanying drawings shows an example of a simple machine embodying my invention, in which—

Figure 1 is a front view,

Fig. 2 is a vertical section, and

Fig. 3 a plan.

The same reference characters designate the same or corresponding parts throughout all the figures.

In type casting machines hitherto generally in use, matrices must be changed whenever it is desired to cast different characters. Thus, in a language such as Japanese which consists of so many characters as many changes of matrices must be made, which necessitates the loss of much labor and time. This invention has been made for the purpose of preventing such loss, and the chief improvements lie in the construction of matrices and their movements with regard to the mold.

At the upper part of a frame 1 is fixed a melting apparatus 2, the upper part of which forms a type-metal pot 3 and the lower part, a furnace 4. To the furnace 4 is led a gas pipe 5, which supplies gas to melt metal in the pot 3. A plunger 6 fits a cylindrical chamber 7, its upper part loosely passing through an arm 9 fixed to the melting pot 3. A coiled spring 8, the upper end of which bears against the arm 9 and the lower end against a shoulder formed on the plunger 6, and thereby presses the plunger downward. The upper end of a curved lever 10 which is pivoted at 11 to the arm 9, loosely passes through a hole in the plunger 6, and its lower end is provided with a roller 12. 13 is a mold fixed at the top of a supporter 14, the lower end of which is firmly fixed to a rod 15 mounted for rotation on the frame 1. The supporter 14 is provided at its middle part with a roller 16. 17 is a matrix board on the front face of which are represented a plurality of different characters 18 and on the back of which are firmly fixed matrices 18′ of these characters at places exactly corresponding to their position on the front surface. The matrix board 17 is slidably mounted on a pair of transverse guide bars 21 so that it can be moved to the right or left on the said guide bars, while the guide bars 21 themselves are mounted on a pair of vertical guide bars 24 in such a way that they can be moved up or down. Thus the matrix board 17 can be moved, by means of a knob 22 carried by the board, to the right or left, as well as vertically, to any desired position. The vertical guide bars 24 are strengthened by cross-pieces 25 and 26, and at their lower ends they are mounted for rotation on the rod 15. 27 is a main shaft, supported for rotation in the sides of the frame 1. On one end of the main shaft is fixed a fly wheel 28 provided with a handle, and approximately at the center of its length is mounted a cam 29. A spring 30 fixed at one end to a stay 31 of the frame 1 pulls the supporter 14 and consequently the roller 16 is pressed against the cam 29. Another spring 32 also fixed to the stay 31 pulls an arm 26′ of the cross-piece 26 which causes a roller 33 at the end of the arm 26′ to press against the cam 29. The plunger 6 which is pressed down by the spring 8 can be made to rise by means of the curved lever 10, its roller 12 being pushed away by the cam 29.

Now, if the cam is turned in the direction of the arrow, the rollers 12, 16 and 33 will successively be brought to the indented part of the cam. Thus when the roller 33 falls into the indented part of the cam, the spring 32 will pull the arm 26′ and thereby the matrix board 17 will be brought into close contact with the mold 13. Next, the roller 16 will fall into the indented part of the cam, when the spring 30 will pull the supporter 14, and the mold 13 together with the matrix board 17 will be brought into close contact with the melting apparatus 2. Lastly, the roller 12 will fall into the said indented part, and the plunger 8 which has been raised, the roller 12 of the curved lever

10 being pushed away by the cam, will fall down and the melted type metal contained in the chamber 7 will be forced into the mold 13. On the cam further moving, the rollers 33, 16 and 12 will be pushed away one after another, and the matrix board 17, the mold 13 and the melting apparatus 2 will be separated, and the type cast and remaining in the mold can be removed by any suitable mechanical contrivance or by hand.

A pointer 36 which extends from the cross-piece 25 always points to the place on the front surface of the matrix board, which exactly corresponds to the mold 13, so that the matrix of any desired character can be brought to the front of the mold. In order to further secure exact relative position of a matrix and the mold, vertical and horizontal racks 37 are fixed to the matrix board and horizontal and vertical bars 38 atached to the supporter 14 to engage the racks.

I claim:

1. In a type casting machine, the combination of a frame, a mold carried thereby, a matrix board supported on said frame in juxtaposition to said mold and adjustable horizontally and vertically, said board carrying on the side adjacent to the mold a plurality of matrices, means for adjusting said board to carry either of said matrices into alinement with said mold, and means for indicating at the opposite side of said board the alining position of said matrices.

2. A type casting machine consisting of a matrix board movable up and down, right and left, on one side of which are arranged matrices of a large number of characters and on the other side are represented characters corresponding to the matrices; a type mold provided facing the matrices with a small space between; means to bring the matrix board into contact with the type mold; and a pointer which points to the character corresponding to the matrix which is in position to fit with the type mold, substantially as and for the purposes hereinbefore set forth.

3. In a type casting machine, the combination of a frame, a mold carried thereby, a matrix board supported on said frame in juxtaposition to said mold and adjustable horizontally and vertically, said board carrying on the side adjacent to the mold a plurality of matrices, means for adjusting said board to carry either of said matrices into alinement with the mold, and coöperating means carried by the frame and board for indicating at the opposite side of the board the alining position of said matrices.

4. In a type casting machine, the combination of a frame, a mold carried thereby, a matrix board supported on said frame in juxtaposition to said mold and adjustable horizontally and vertically, said board carrying on the side adjacent to the mold a plurality of matrices, means for adjusting said board to carry either of said matrices into alinement with the mold, coöperating means carried by the frame and board for indicating at the opposite side of the board the alining position of said matrices, and means for maintaining the board in said alining position.

5. In a type casting machine, the combination of a frame, a mold carried thereby, a matrix board supported on said frame in juxtaposition to said mold and adjustable horizontally and vertically, said board carrying on the side adjacent to the mold a plurality of matrices, and on the opposite side a character for indicating the exact location of each matrix, means for adjusting said board to carry either of said matrices into alinement with said mold, and stationary means carried by the frame in alinement with the mold and overlying the character carrying side of the matrix board thereby to coöperate with said characters for indicating the alining position of the matrices.

6. In a type casting machine, the combination of a frame, a mold carried thereby, a matrix board supported on said frame in juxtaposition to said mold and adjustable horizontally and vertically, said board carrying on the side adjacent to the mold a plurality of matrices, means for adjusting said board to carry either of said matrices into alinement with the mold, coöperating means carried by the frame and board for indicating at the opposite side of the board the alining position of said matrices, and means for maintaining the board in said alining position, and comprising vertical and horizontal racks carried by the matrix board and horizontal and vertical bars carried by the mold support for engagement with said racks.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

KYOTA SUGIMOTO.

Witnesses:

ROGER P. STONE,

THOMAS C. SMITH.