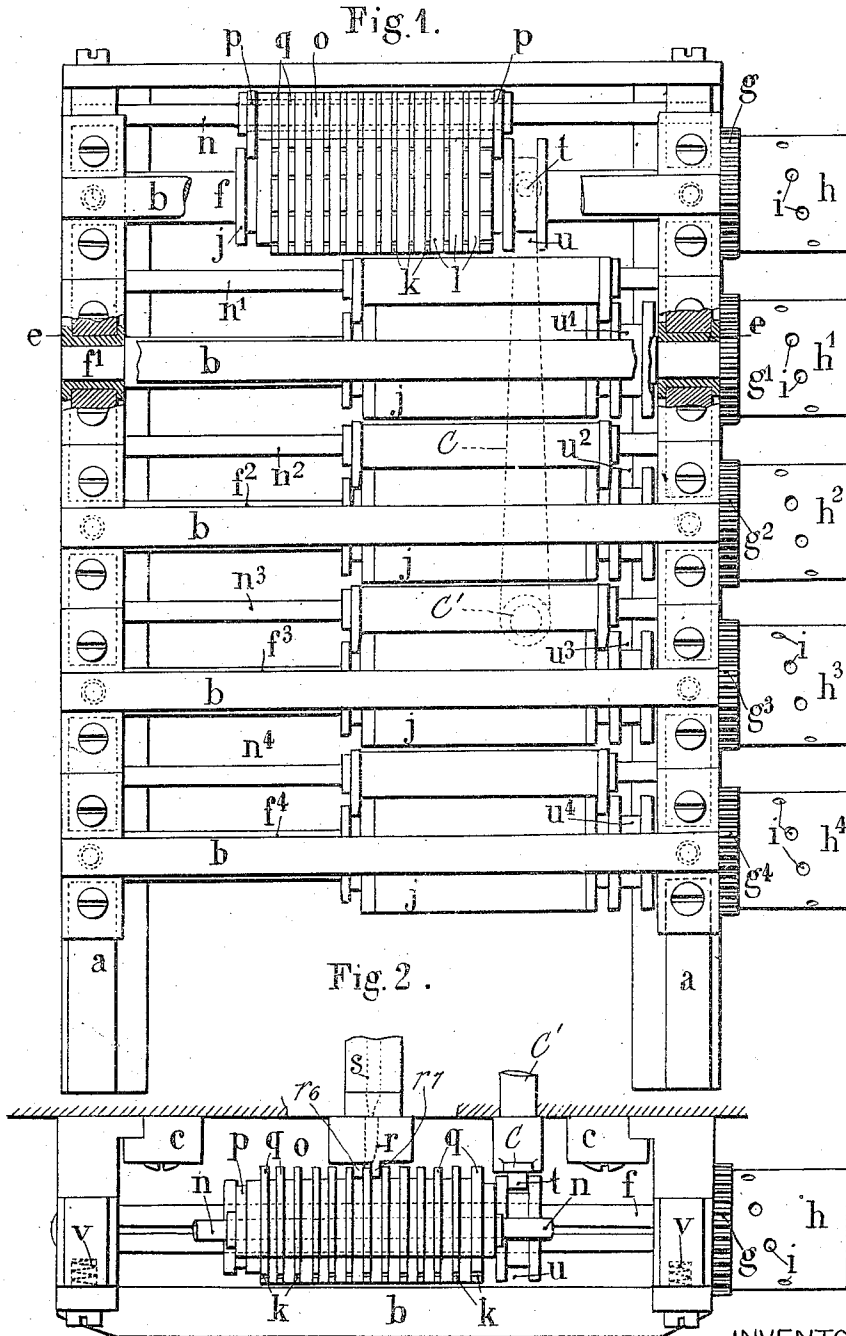


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MACHINE FOR CASTING AND COMPOSING TYPE.
APPLICATION FILED JAN. 23, 1911.

1,042,285.

Patented Oct. 22, 1912.

2 SHEETS—SHEET 1.



WITNESSES

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Fig. 3.

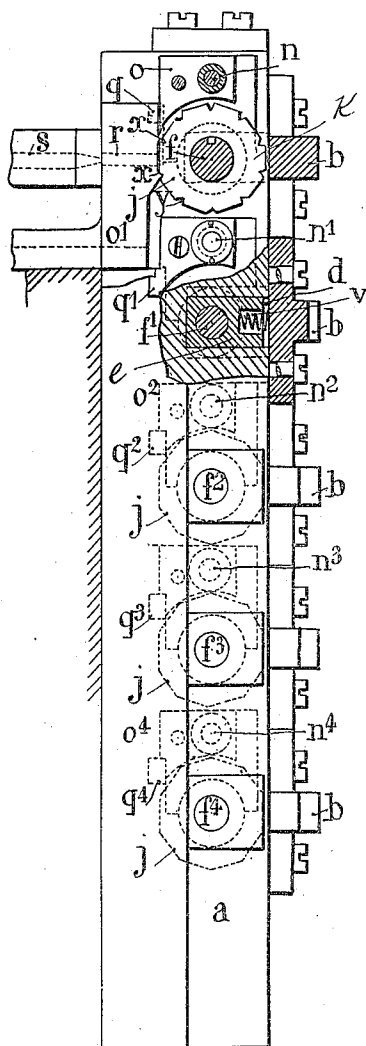


Fig. 4.

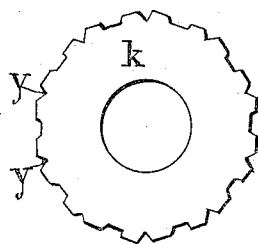
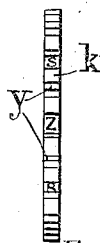


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANZ SCHIMMEL, OF NANCY, FRANCE.

MACHINE FOR CASTING AND COMPOSING TYPE.

1,042,285.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed January 23, 1911. Serial No. 604,245.

To all whom it may concern:

Be it known that I, FRANZ SCHIMMEL, of 103 Rue du Sergent Blandan, Nancy, Meurthe-et-Moselle, Republic of France, engineer, have invented Improvements in and Relating to Machines for Casting and Composing Type, of which the following is a full, clear, and exact description.

This invention relates to an arrangement of matrices for casting and composing separate types, adapted to be applied to all kinds of machines for casting and composing type one by one, and adapted to permit a mixed composition of type of different fonts or characters without requiring, as in linotype machines, a large number of matrices for each font or character. For this purpose, the matrices of various letters and signs of the same font or character, are arranged on the periphery of a prismatic block which has imparted thereto a rotary movement and a reciprocatory movement on its axis. Suitable means controlled by the keyboard of the machine permits the block to be stopped when the letter or sign to be cast and composed is brought opposite to a casting mold which is formed by two pieces capable of being separated more or less according to the breadth of the letter or sign to be cast. A comb taking part in the movement of translation of the matrix block gives to the mold the required separation for each letter or sign to be cast. If it is required to compose in type of several fonts or characters as many of these matrix blocks as it is required to have of different fonts or characters, are mounted on a movable support and, accordingly as it is required to compose in type of one font or character, or in another, the support is moved in such a manner as to bring the corresponding block into engagement with the mechanism intended to move it, and also to bring it in front of the casting mold.

By way of example, the accompanying drawing shows one constructional form of the invention.

Figure 1 is an elevation; Fig. 2 is a plan view; Fig. 3 is a side view, partly in section; and Figs. 4 and 5 are respectively a side view and an edge view of one of the letter or sign plates of a matrix block.

A frame comprising two uprights *a* connected by cross bars *b* is arranged to slide in guideways *c* (Fig. 2), fixed on the frame of the machine, and which are inclosed by the

uprights *a*. In the uprights *a* are formed recesses *d* (Fig. 3), in which slide, transversely to the plane of the frame, bearing blocks *e* in which turn grooved shafts *f*, *f*¹, *f*², *f*³, etc. Each of these shafts carries, at one extremity thereof, a gear wheel *g* and a drum *h* having a spirally arranged series of perforations *i* formed therein. Slidable longitudinally on each of the before-mentioned shafts is a matrix block *j* which is provided with a key engaged in the groove of the shaft, in such a manner that this block is driven by the shaft when its pinion *g* is in gear with a continuously rotating pinion not shown, which may be carried on the frame of the machine.

Each block *j* carries on its periphery in intaglio a complete alphabet of a selected font or character and there are provided as many blocks *j* as the number of different fonts or characters required. The matrices of the letters or signs are formed in intaglio in the faces of polygonal plates *k* which are separated by plates *l* of equal diameter. The block *j* may be formed from a single piece but preferably it is composed of plates *k*, similar to that represented in Figs. 4 and 5, and washers *l* threaded alternately on a boss forming the body of the block *j*. In each case, each plate carries a certain number of intaglio letters or signs of the same width; in Fig. 4, it will be seen that each plate *k* carries ten letters.

Parallel to each of the shafts *f*, *f*¹, *f*², *f*³, and *f*⁴ is arranged a guide-bar *n* on which slides a comb *o* which carries two forks *p* respectively engaging in corresponding grooves in the block *j*. The comb *o* therefore follows the reciprocatory movements of the block *j*. This comb comprises teeth *q* respectively placed opposite to each plate *k*, Fig. 3, the thicknesses of the teeth respectively corresponding to the breadth of the letters or signs on the plate opposite thereto.

A carriage sliding on the frame of the machine and carrying a casting mold *r* in front of the nozzle *s* of a pot filled with casting metal, can be displaced perpendicularly to the plane of the frame *a*, *b*. The width of the mold may vary and is automatically determined, according to the width of the letter to be cast, by the teeth of the comb *o* as will be hereinafter more particularly described. Lastly, a pin *t* carried at the end of a continuously oscillated lever *C*

mounted on a shaft C^1 is adapted to engage in a groove u of the block j when the latter is level with the casting mold r .

The operation of this arrangement herein-
 5 above described is as follows: When it is required to compose in type of a selected font or character, the particular block j , j^1 , j^2 , j^3 , etc., which carries the letters of this font or character is brought opposite to the
 10 casting mold r by sliding the uprights a on the guideways c . As shown in the drawing, the uppermost block j is in the position for use. The pin t engages in the groove u of the block j and imparts to the latter a
 15 reciprocatory movement. The pinion g is brought into gear with the driving pinion hereinabove mentioned, and the shaft f transmits rotary movement to the block j . By depressing a key on the keyboard suitable
 20 mechanism effects the stopping of the finger t at the moment when the plate k which carries the matrix corresponding to the sign of the key struck, is opposite to the mold r . A suitable device then stops the
 25 rotation of the shaft f at the moment when the said matrix itself arrives in front of the mold r . For example, movable pins controlled by the keyboard of the machine are arranged opposite to the drum h which carries
 30 as many perforations i as there are letters or signs on each plate k . For each perforation i there is a corresponding movable pin. When one of the keys of the keyboard of the machine is depressed, one of these
 35 pins is pressed on the surface of the drum h and when the perforation corresponding thereto passes beneath it, this pin drops therein and brings the shaft f to rest, in the desired position so that the letter or sign
 40 which corresponds to the key struck is in front of the mold r . The mold is then advanced and its projections r^a and r^r closing on one of the teeth q of the comb v limits the breadth of the mold suitable for the letter
 45 or sign to be cast, and a jet of casting metal is then injected into the mold. The mold is then drawn back and the matrix block is again set in movement to cast another letter or sign.
 50 It should be remarked that the bearing blocks e carrying the shaft f are pushed toward the bottom of the recesses d by springs v (Figs. 2 and 3), which tend to separate each matrix block from the cross-bar b
 55 placed opposite to it, in such a manner as to permit the said matrix blocks to turn without striking against the said bar. When the mold r is pressed against the block j for the casting of a letter, it presses back the said block and the shaft f at the same time compressing the springs v , and the
 60 block j then comes to rest against the cross bar b . The mold can therefore be vigorously pressed against the block j in order
 65 to prevent any leakage of the casting metal,

without risk of bending the shaft f . As soon as the letter is cast, the mold is drawn back and the shaft f is moved forward again by the springs v , so as to permit renewed
 70 rotation of the block j .

The casting mold carries two teeth or projections x which enter recesses y in the plates k to insure perfect alinement of the letters with respect to the mold.

The description hereinabove given with
 75 reference to the block j applies equally also to the other blocks j^1 , j^2 , j^3 which are each similar to the block j . If it is desired to compose in a type of a font or character corresponding to one of the lower blocks j , the
 80 frame a , b is raised so as to bring the said block in front of the mold. The respective pinion g , g^1 , g^2 , g^3 , and g^4 comes into engagement with the driving pinion, the finger
 85 t engages in the groove u and the perforations i of the respective drum h pass in front of the movable pins controlled by the keyboard.

It is evident that the arrangement herein-
 90 above described and given by way of example can be replaced by any other analogous arrangement without departing from the principle of the invention and that the dimensions, form and detail arrangements
 95 can be modified as may be desired. Thus, for example, the body or frame carrying the matrix blocks can be displaced vertically or horizontally. The matrix blocks, in place
 100 of being carried by a flat frame, can be mounted on the circumference of a wheel in such a manner that, by turning the wheel, one or other of the blocks can be brought in front of the casting mold.

Claims:

1. In a machine for casting and compos-
 105 ing types, the combination of a mold of variable width, a block provided with matrices distributed on its surface and arranged in a circular series, means for imparting to said block a rotary motion about
 110 its axis and a longitudinal movement along its axis for bringing the desired type in front of the casting mold, and a comb adapted to follow the longitudinal movement of the block and each tooth of which
 115 serves to adjust the width of the mold for an entire circular series of types of the matrix block.

2. In a machine for casting and compos-
 120 ing types, the combination of a mold of variable width, a support carrying several rotary shafts and adapted for movement to bring the several shafts opposite the mold, matrix blocks each of which is mounted on
 125 one of said shafts so as to be actuated by it and adapted to slide along the same for bringing the desired type in front of the casting mold, and combs moving with the blocks and each tooth of which serves to ad-
 130 just the width of the mold for an entire

circular series of matrices of the matrix block.

3. A type casting and composing device, comprising a rotary shaft, a prismatic block 5 slidingly mounted on said shaft and constituted by polygonal plates and spacing pieces between said plates, matrices of letters or signs of the same font or character carried on the periphery of said polygonal 10 plates, a driving finger for moving the prismatic block along the shaft, a casting mold of variable width, said mold having means for varying its width and being capable of being moved toward or from the prismatic 15 block, a centering tooth cooperating with notches in the polygonal plates, and a comb determining the width of the mold, movable along the shaft with the prismatic block and presenting a number of teeth equal to the 20 number of polygonal plates constituting the prismatic block each tooth having a thickness equal to the width of the letters or signs carried by the corresponding polygonal plates and cooperating with means for 25 varying the width of the casting mold.

4. A type casting and composing device, comprising rotary shafts, a prismatic block 30 slidingly mounted on one of said shafts and constituted by polygonal plates and spacing pieces between said plates, matrices of letters or signs of the same font or character

carried on the periphery of said polygonal plates, a driving finger for moving the prismatic block along the shaft, a casting mold 35 of variable width capable of being moved toward or from the prismatic block, a centering tooth cooperating with notches in the polygonal plates, and a comb determining the width of the mold, movable along the shaft with the prismatic block and presenting 40 a number of teeth equal to the number of polygonal plates constituting the prismatic block, each tooth having a thickness equal to the width of the letters or signs carried by the corresponding polygonal 45 plates and cooperating with means for varying the width of the casting mold, other blocks carrying letters or signs of different characters and which are mounted on the other shafts, and a frame carrying said ro- 50 tary shafts and adapted for movement to bring the several blocks into and away from, a position opposite the mold.

The foregoing specification of my improvements in and relating to matrices for machines for casting and composing movable type signed by me this 31st day of December, 1910.

FRANZ SCHIMMEL.

Witnesses:

H. C. COXE,
R. EHRIOT.

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