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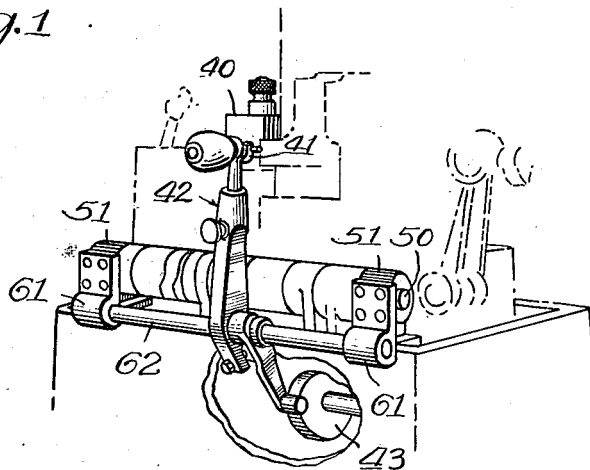
L. A. NEUMANN

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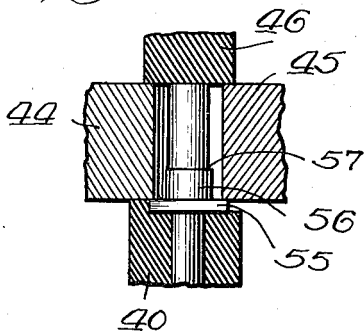
APPARATUS FOR CASTING QUADS OR SPACERS

Original Filed Oct. 6, 1934

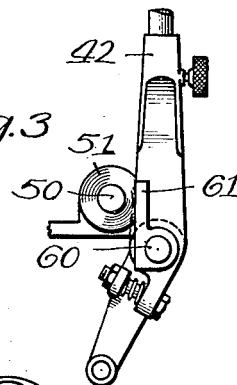
*Fig. 1*



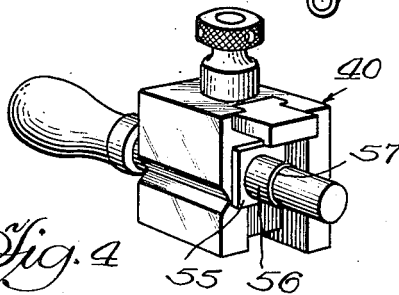
*Fig. 5*



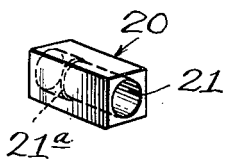
*Fig. 3*



*Fig. 4*



*Fig. 2*



Witness:  
*Chas. L. Goursch.*

Inventor,  
*Lester A. Neumann,*  
Offield Neillhope Scott & Pook, Attys.

# UNITED STATES PATENT OFFICE

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## APPARATUS FOR CASTING QUADS OR SPACERS

Lester A. Neumann, Chicago, Ill., assignor to  
M & L Typesetting & Electrotyping Company,  
Chicago, Ill., a corporation of Illinois

Original application October 6, 1934, Serial No.  
747,158. Divided and this application August  
15, 1935, Serial No. 36,268

3 Claims. (Cl. 199—80)

This invention relates to improvements in apparatus for casting quads or spacers, such quads or spacers for use as parts of the novel form of printing plate such as broadly disclosed in my co-pending application, Serial No. 747,158 filed October 6, 1934, of which the present application is a division.

In carrying out my invention, I utilize a standard or commercial form of type-casting machine, but provide certain simple modifications in construction thereof so as to produce a quad or spacer having a cylindrical aperture or hole extending through the full length thereof.

The invention may best be understood by reference to the accompanying drawing, in which

Fig. 1 is a perspective view of a type-casting machine of a well known commercial form, in which certain modifications have been made so as to adapt it to the production of the novel form of quads above referred to.

Fig. 2 is a perspective view of a single quad which is produced in a novel method herein disclosed.

Fig. 3 is a fragmentary side view of the modified lever mechanism employed in the machine shown in Fig. 1.

Fig. 4 is a perspective view of a standard form of matrix carrier utilized in the type-casting machine shown in Fig. 1, but having applied thereto a cylindrical matrix for forming the elongated holes in the quads shown in Fig. 2.

Fig. 5 is a detailed transverse sectional view showing the various portions of the type mold and matrix utilized in my improved type-casting machine.

Referring now to the embodiment of my invention illustrated in the drawing, the product to be manufactured thereby is shown in Fig. 2 which consists of a single block forming a square quad of standard length. Said block is provided with a hole 21 which is preferably of reduced diameter near one end thereof so as to leave an undercut shoulder indicated at 21<sup>a</sup>. These blocks or quads are specially designed for utilization in the novel form of printing base fully disclosed in my parent application above referred to. For the present application it will be sufficient to state that the holes 21 are designed to accommodate plate hooks of the well known form which are detachably connectible in the holes 21 and engage the shoulders 21<sup>a</sup> therein so as to secure the margins of printing plates to the top of the base formed by a plurality of such quads or blocks 20.

Referring now to the preferred method of pro-

ducing the quads 20 on a type-casting machine so as to form the holes 21 extending lengthwise therethrough, I have illustrated portions of a standard Thompson type-casting machine which has been modified so as to produce my novel form of quad. The principal parts of said type-casting machine illustrated herein include a matrix carrier 40, matrix carrier fork 41, carrier lever 42 and carrier cam 43.

The matrix carrier forms the outer end of a mold shown in section in Fig. 5 in which one side mold blade 44 is movable downwardly, the opposite mold blade 45 is movable horizontally, and the end of the mold opposite the matrix carrier 40 is closed by a plate 46.

When employed for making standard type, the matrix carrier usually has removably mounted thereon a matrix (not shown herein) carrying the impression which forms the character, letter or other figure of each type. The matrix carrier is given limited horizontal movement sufficient to withdraw the matrix from the type after it has been cast. Simultaneously the vertical mold blade 44 is withdrawn downwardly, and the opposite mold blade 45 is then moved toward the left as seen in Fig. 5 so as to discharge the finished type onto a suitable rack (not shown). The mold blades 44 and 45 are then returned to their normal position, and the matrix carrier 40 closes the end of the mold ready for forming the next type in the same manner.

It will be understood that in the operation of the standard type-casting machine as above described, the amount of movement required for the matrix is relatively small, since it is only necessary to give horizontal clearance for the height of the character impression at the end of the mold. This limited movement is provided by a matrix carrier lever usually mounted on a cam lever shaft 50 mounted in pillow blocks 51, 51. The length of the matrix carrier lever and the throw of the matrix carrier cam in such standard machine is relatively small, so as to produce a travel of the matrix carrier which usually does not exceed  $\frac{3}{8}$  of an inch for forming the largest forms of type.

In order to produce my novel form of quad 20, with an elongated hole extending the full depth thereof, I have modified the standard form of type-casting machine in the following manner:

A matrix plate 55 is mounted on the matrix carrier 40 in the usual manner, but said matrix plate carries a projecting cylindrical core 56 adapted to extend the full length of the mold formed by the matrix carrier 40, the mold blades

44, 45, the end plate 46, as well as the upper and lower plates (not shown) which complete the mold. The core 56 is tapered slightly to give the desired draw, and is provided with a shoulder 57 adjacent the outer end thereof, arranged to form the shoulder 21<sup>a</sup> in the quad. The matrix carrier is mounted on the carrier lever 42, but in order to give said matrix the greatly increased horizontal movement (about one inch) now necessary to permit complete withdrawal of the core 56 from the mold, I provide an auxiliary shaft 60 mounted on supports 61, 61 secured to the outer face of the pillow blocks 51 of the type-casting machine, so that the axis of the shaft 60 is disposed a point substantially outside of and below the axis of the cam lever shaft 50 on which the shorter lever, usually employed with standard type matrix, is pivoted, as previously described. The matrix carrier lever 42 is, therefore, substantially longer than the usual carrier lever for which it is substituted. Similarly, the throw of the matrix carrier cam 43 is greater than that of the standard cam which it replaces, so as to provide the necessary increase in travel of the matrix carrier and core 56.

From the above description, it will now be seen that the individual quads may be produced in large quantities in a standard type-casting machine modified as described, the only changes necessary being the provision of increased travel of the matrix carrier and the substitution of core 56 for the usual matrix plate.

It will be observed, however, that the finished quads 20, 20 are utilized for forming the base in a position that is reversed or inverted with respect to the usual printing arrangement of regular type, when the latter are formed in the same machine. In other words, when ordinary type are inserted in the base plate, the matrix ends of such type are facing upwardly in the base whereas the corresponding matrix ends of the quads are disposed at the bottom of said base.

Although I have illustrated and described one

particular embodiment of my invention, it will be understood that I do not wish to be limited to the exact construction shown and described, but that various changes and modifications may be made without departing from the spirit and scope of my invention as defined in the appended claims.

I claim:

1. In combination with a type-casting machine having an elongated mold and a matrix carrier movable longitudinally relative thereto, an attachment for said matrix carrier comprising a matrix plate adapted to close one end of said mold and having a core of the same length as said mold, and means for imparting longitudinal reciprocable movement of said matrix plate and core relative to said mold for substantially the full length of the latter.

2. In combination with a type-casting machine having an elongated mold provided with movable side walls, and a matrix carrier movable longitudinally relative to said mold, an attachment for said matrix plate adapted to close one end of said mold and carrier comprising a matrix having a cylindrical core of the same length of said mold and axially movable relative thereto, and means for imparting longitudinal reciprocable movement of said matrix plate and core into and out of said mold in timed relation with the movement of said side walls.

3. In combination with a type-casting machine having an elongated mold and a matrix carrier movable longitudinally relative thereto, an attachment for said matrix carrier comprising a matrix plate adapted to close one end of said mold and having a cylindrical tapered core of the same length as said mold, said core having an offset shoulder intermediate its ends, and means for imparting longitudinal reciprocable movement of said matrix plate and core for substantially the full length of said mold.

LESTER A. NEUMANN.