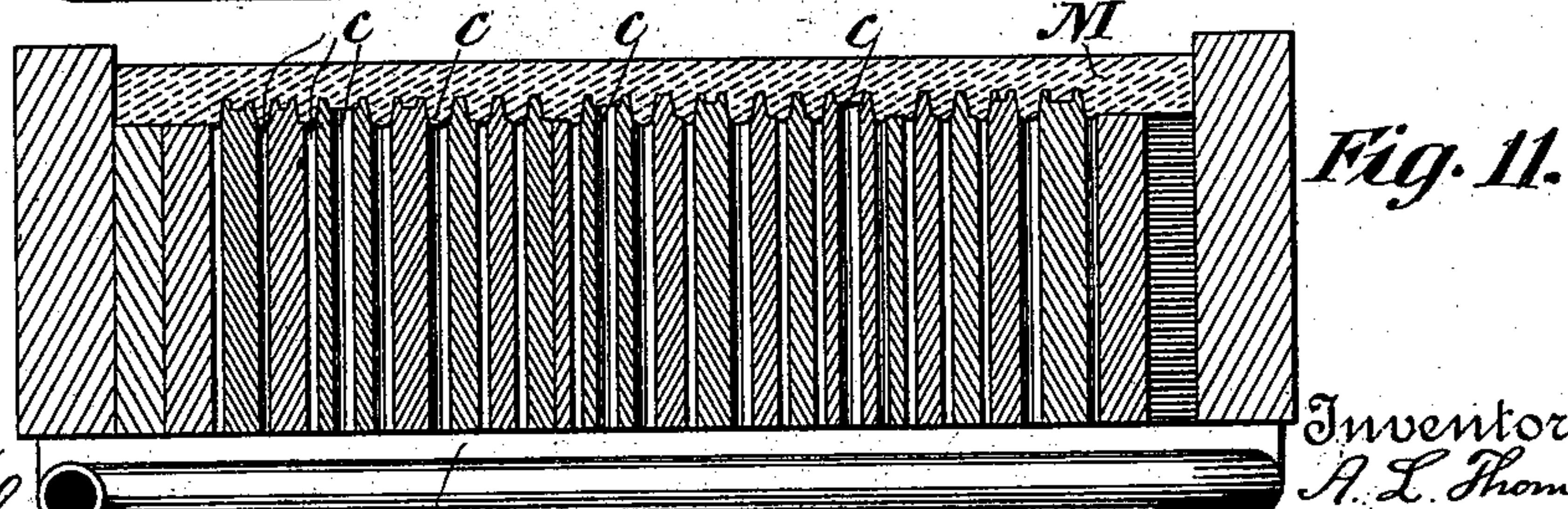
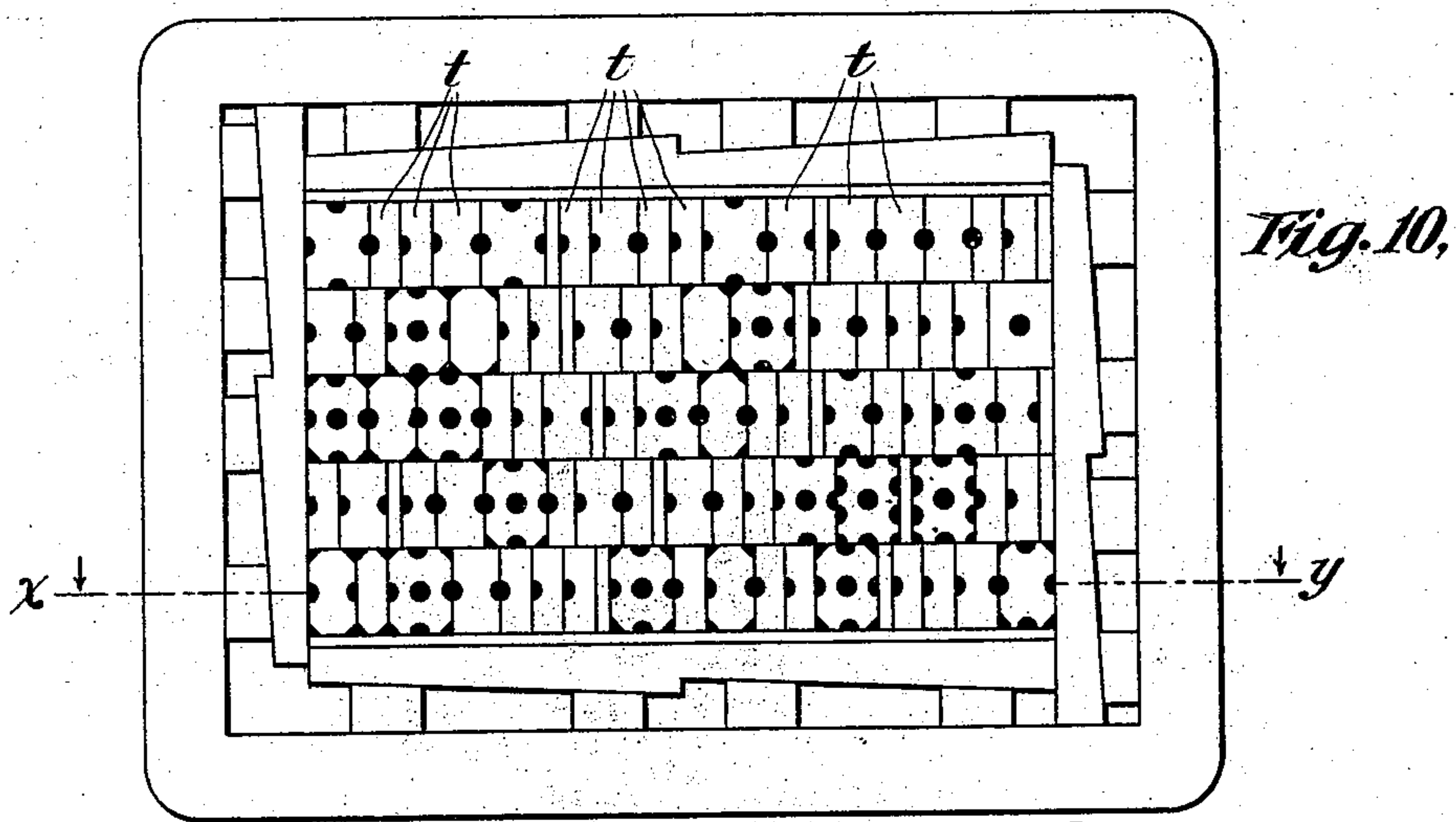
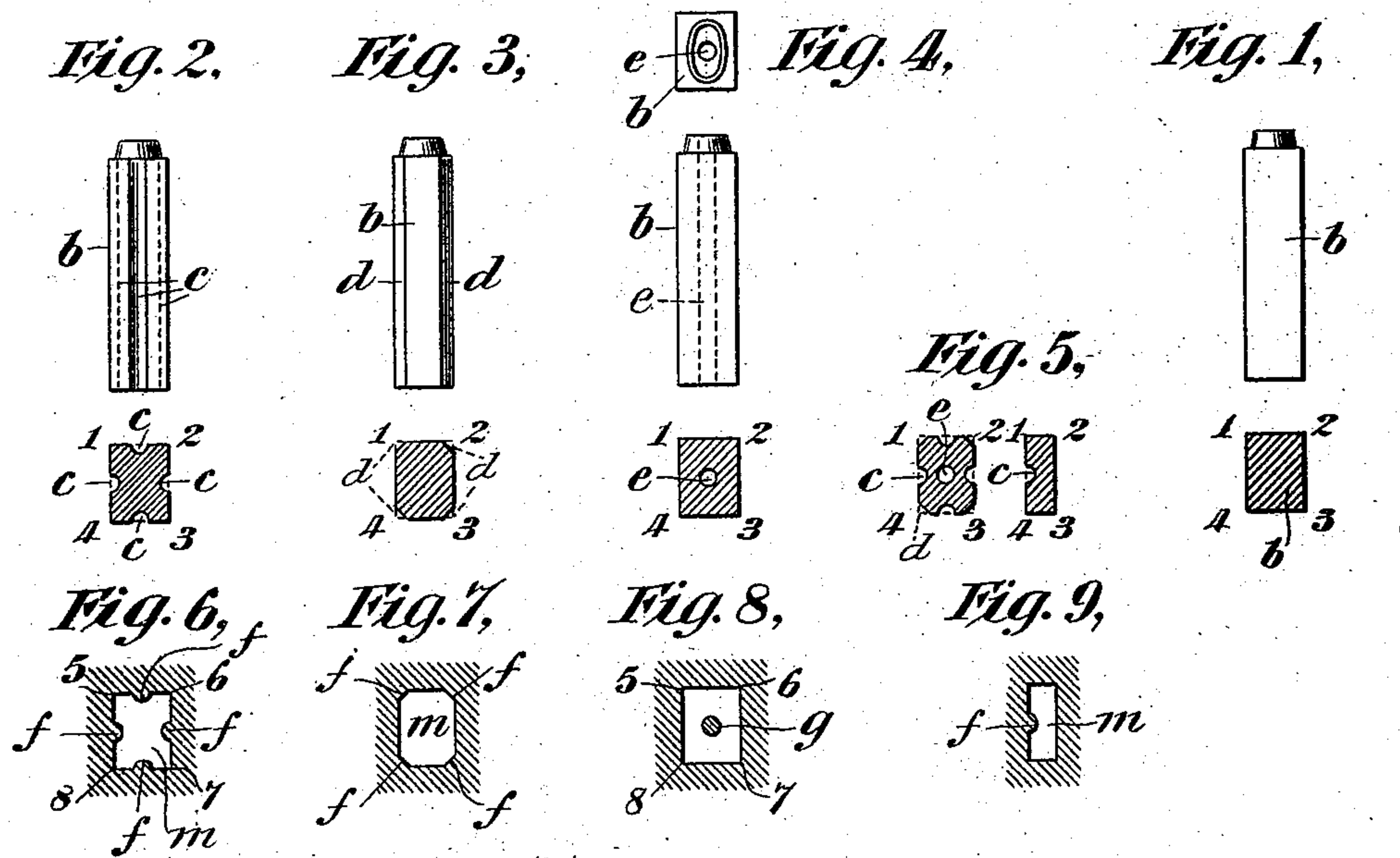


(No Model.)

A. L. THOMAS.
DRYING MATRICES AND MEANS THEREFOR.

No. 506,349.

Patented Oct. 10, 1893.



Witnesses
C. E. Ashley
H. W. Lloyd.

Inventor
A. L. Thomas
By his Attorneys
Wiley & Parker.

UNITED STATES PATENT OFFICE.

ALBERT L. THOMAS, OF NEW YORK, N. Y.

DRYING MATRICES AND MEANS THEREFOR.

SPECIFICATION forming part of Letters Patent No. 506,349, dated October 10, 1893.

Application filed June 1, 1892. Serial No. 435159. (No model.)

To all whom it may concern:

Be it known that I, ALBERT L. THOMAS, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Drying Matrices and Means Therefor, of which the following is a specification.

A present method of forming matrices for stereotyping purposes is to lock the matter in forms, spread plastic material, as papier maché, over the type-face side and beat the same down with brushes or the like to fill all spaces more or less. The whole is then placed on the drying table and heated from the under side until the matrix is dried by the heat transmitted through the metal of the type. There are many objections to this method, chief among which may be noted the damage to the type by permanent elongation, the high temperature required at the bottom of the form, the amount of heat wasted, and the length of time required to dry the matrices. It is a matter of experience that the type are damaged greatly by this process, there taking place permanent elongation of the same due to the great heat to which they are subjected. The thinner the type the greater is this elongation. There thus arises a difference in height between used and unused type causing an unsightly appearance of pages printed from subsequently set type. A new font of type is required long before the old is really worn out. A high temperature is required since a great amount of heat is expended in heating the type-metal to the temperature required for drying the matrix material. That is, of all the heat received by the type-form from the table, a large part is absorbed by the type metal and the rest is slowly transmitted from particle to particle until it reaches the matrix material, where it acts in like manner, eventually expelling the moisture. Stated differently, the absorbed heat is wasted; it does no useful work, but the contrary; the transmitted heat alone does the drying. After the drying, the matrix is used for stereotyping purposes in ways that need not be further referred to.

The objects of this invention are to avoid damage to the type from permanent elongation, to do the drying at a lower temperature, to avoid the waste of heat and to dry the ma-

trix more quickly than is possible by the present method.

To these ends the invention consists of the method and the means hereinafter described and more particularly pointed out in the claims concluding this specification.

Forms of my invention are shown in the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of an ordinary type and a cross-section of the body thereunder. Fig. 2 is a similar view of one form of my invention. Figs. 3 and 4 are similar views of other forms thereof, Fig. 4 showing a type face. Fig. 5 shows cross-sections of two other forms thereof. Figs. 6, 7, 8, 9 are sections of molds of my invention. Fig. 10 is a bottom view of a form showing the appearance thereof when various forms of my type quads, &c., are used, and Fig. 11 is a sectional elevation on the line $x-y$, Fig. 10, showing the matrix and drying table.

No nicks or bottom grooves in any of the type are shown.

The ordinary type shown in Fig. 1 has a rectangular body b , which is clearly shown in the rectangle 1, 2, 3, 4 or cross-section.

So far as the type, quads, and leads are concerned, my invention consists of a type, quad or lead the cross-sectional area of the metal body of which is less than that of the parallelogram formed by the sides thereof when cross-sectioned as in Figs. 2 to 5.

The rectangular prism formed by the sides of the body of a type is indicated in Figs. 1 to 5 by the cross-section bounded by lines 1—2, 2—3, 3—4, 4—1. In Fig. 1, the metal takes up the whole of this area. In Figs. 2, 3, 4 and 5 the metal takes up only the area indicated by the shaded portions. Those portions of the rectangle 1, 2, 3, 4 left in white in these figures represent diathermanous channels or channels transparent with respect to heat, as air or rock-salt. That is, when my type are assembled in forms, radiant heat passes through these channels without sensibly raising their temperature. I prefer that these channels shall be air-spaces within the rectangle of the type, quad, &c., extending the length of the body thereof.

In Fig. 2, there are grooves c extending the length of the body of the type.

In Fig. 3, the channels are in the form of beveled corners *d* extending longitudinally of the body of the type.

In Fig. 4, the channel *e* is centrally placed and consists of an air-space in the body of the type.

The left hand section in Fig. 5 shows a combination of the three forms described above. The right hand section in Fig. 5 shows but one groove, and this will be the most usual form in practice.

In Figs. 6, 7, 8, 9 are shown cross-sections of various forms of molds for casting my type, quads, &c. Ribs or projections *f*, *f*, or a core *g* reduce the cross-sectional area below that of the rectangle 5, 6, 7, 8, of the mold *m*.

Fig. 10 shows the appearance of the bottom of a form made up of type of my invention, the semi-circles, circles, and triangles represent the perforations or channels by which one may see light through the form. I prefer that the channels, grooves or slits shall be on the sides of the type, quads, &c., as indicated by the type or quads *t*, *t*, in Fig. 10; that is, on that side or those sides of a type which come against other type or quads in the same line of matter; since, by this construction there is no danger of narrow type in any line getting out of alignment by slipping into the grooves of type in adjoining lines. It is not necessary to my method that all the type should have channels. Narrow type, as the letters *i*, *j*, &c., and punctuation marks and space quads may have no diathermanous channels.

Fig. 11 shows a section of a form having the matrix material *M* thereon and itself resting on the usual steam-heated drying table *T*. According to the laws of heat, the steam gives up heat to the table *T*, which radiates it. Radiant heat is transmitted in air as in vacuo, at the velocity of light. Consequently, the matrix material *M* receives heat direct from the table *T* by way of the channels therefor, and is very quickly dried, as compared with

the usual method. Further, I can work at a much lower temperature than is practically possible in the usual methods. These two points combined keep the temperature of the type from rising very much above that of the air or room in which they are. The steam under the table *T* is at a pressure of sixty pounds or more in many establishments corresponding to a temperature of about 291° Fahrenheit.

I am aware that slugs sometimes have large holes through them to make them lighter. I do not claim such as of my invention. But I do claim as within my invention, type, quads, leads, and logotype, whether of one word or more.

What I claim as my invention is—

1. The method of drying matrices on type forms consisting in causing radiant heat to reach the matrix material through diathermanous channels in the form, substantially as and for the purposes described.

2. The method of drying matrices on type forms, consisting in passing radiant heat to the same from the bottom of the forms through numerous small perforations or open channels in the forms, substantially as described.

3. Type each having one or more diathermanous channels extending the length of the body thereof, whereby when in forms these channels exist as and for the purposes described.

4. Type having one or more grooves or slits extending the length of the body thereof, whereby when assembled in forms the forms have diathermanous channels therein, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two witnesses, this 24th day of May, 1892.

ALBERT L. THOMAS.

Witnesses:

RICHARD H. MITCHELL,
RICHARD W. BARKLEY.