

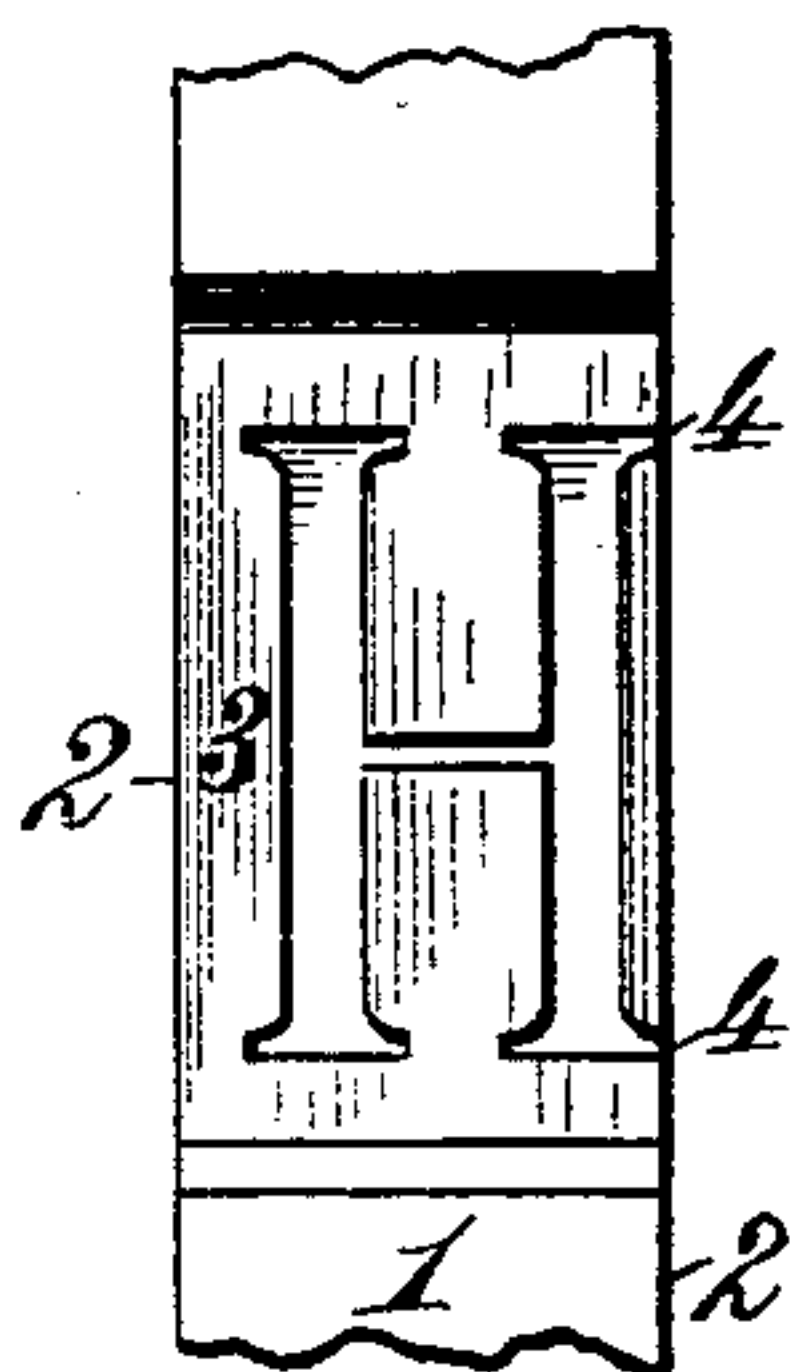
(No Model.)

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MATRIX FOR LINE CASTING MACHINES.

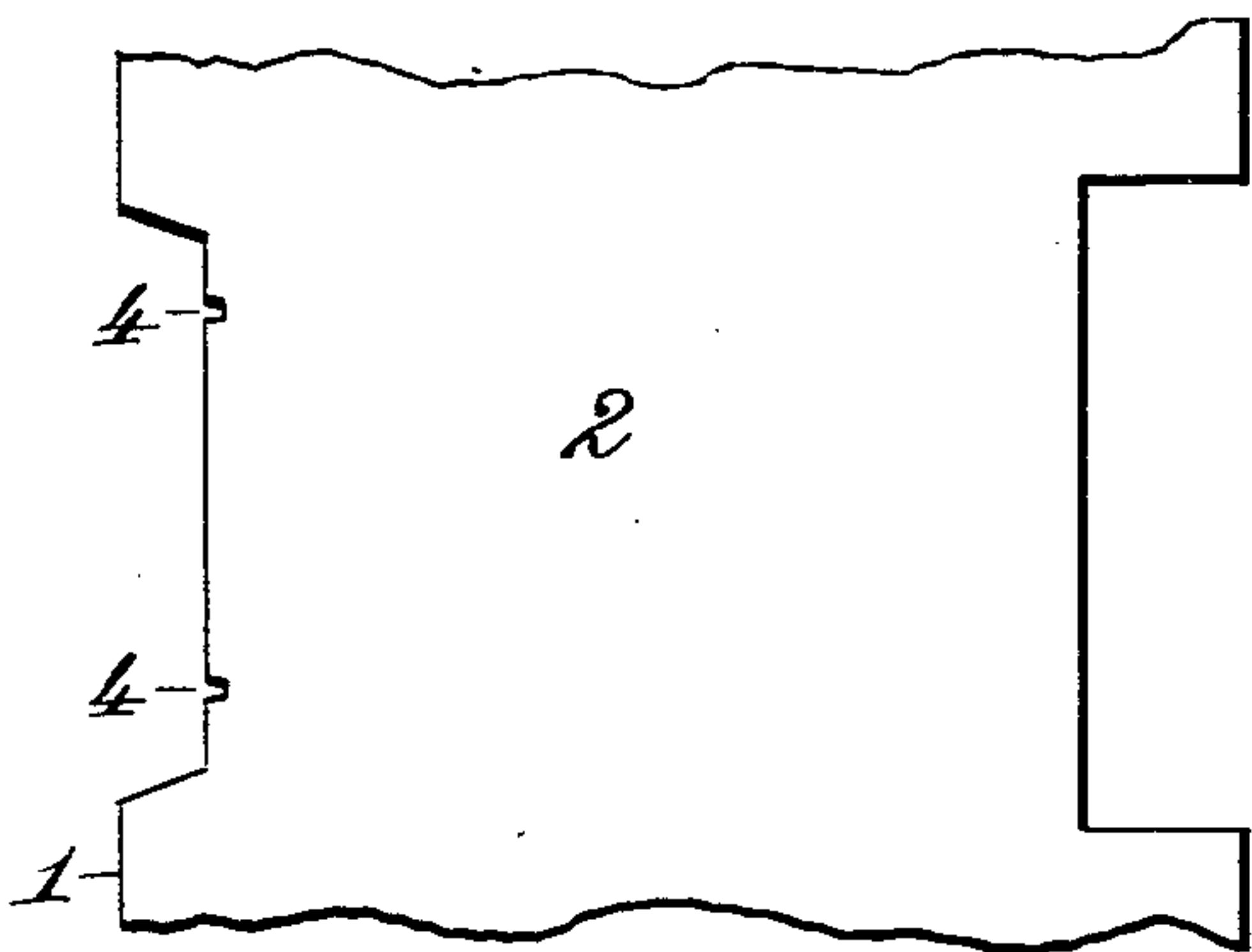
No. 591,947.

Patented Oct. 19, 1897.

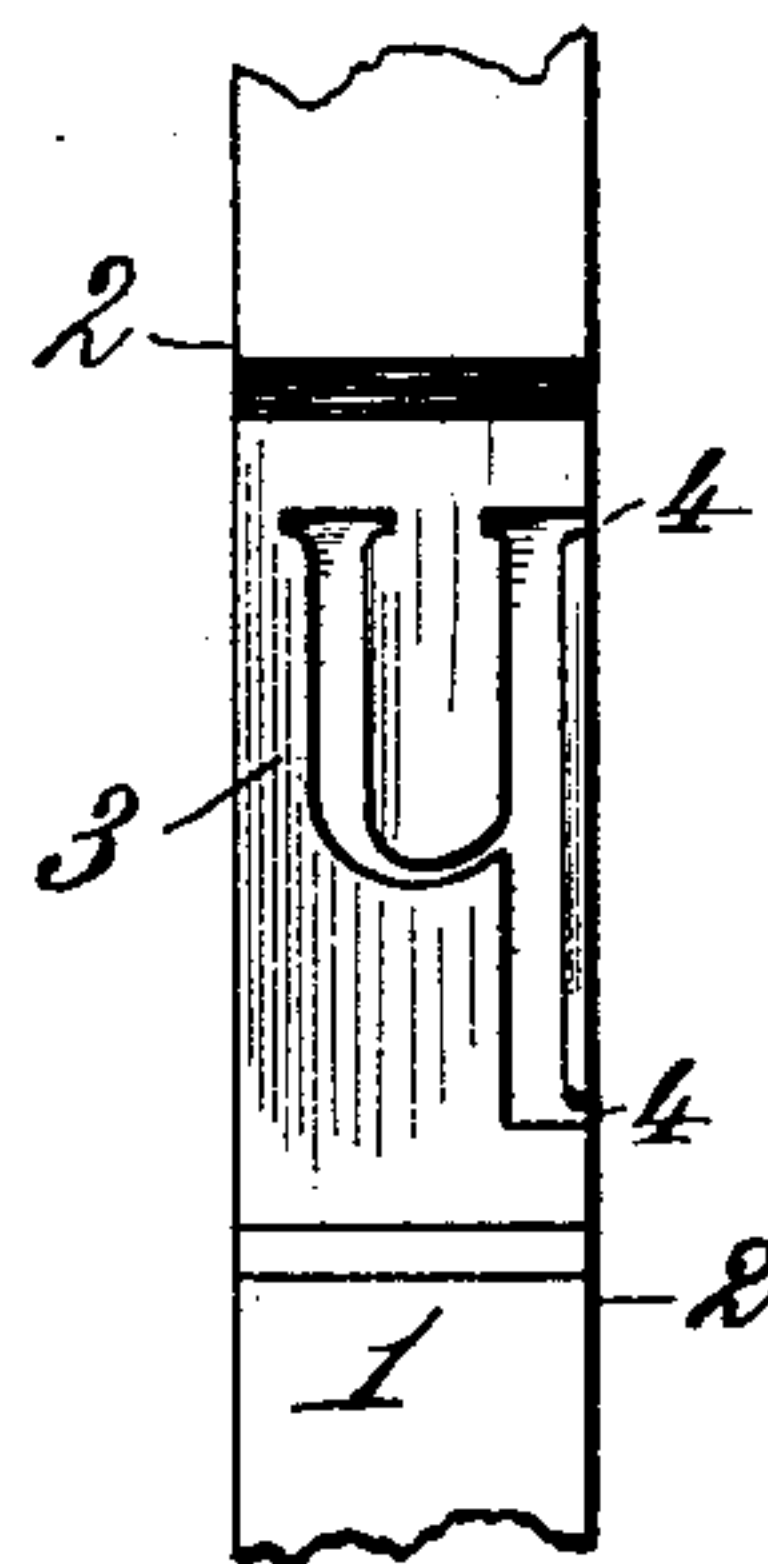
*Fig. 1.*



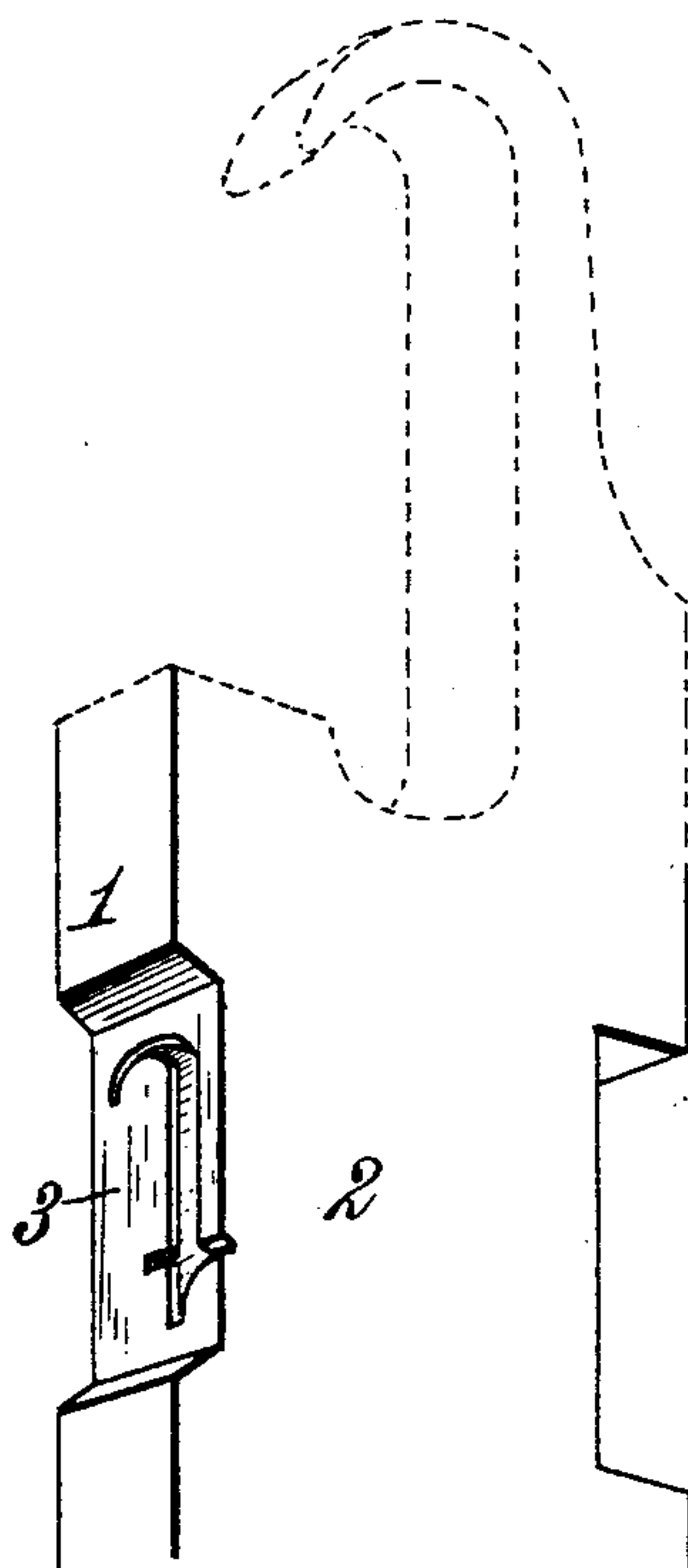
*Fig. 2.*



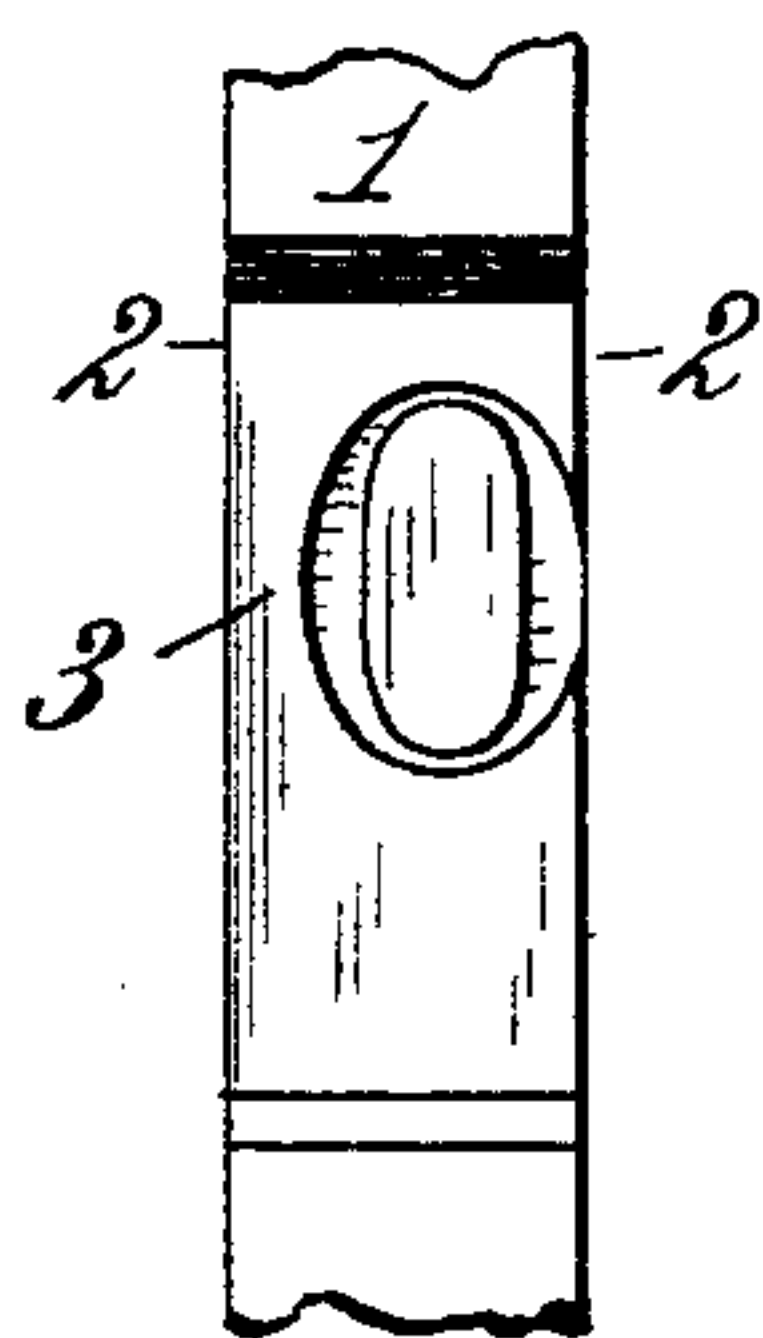
*Fig. 3.*



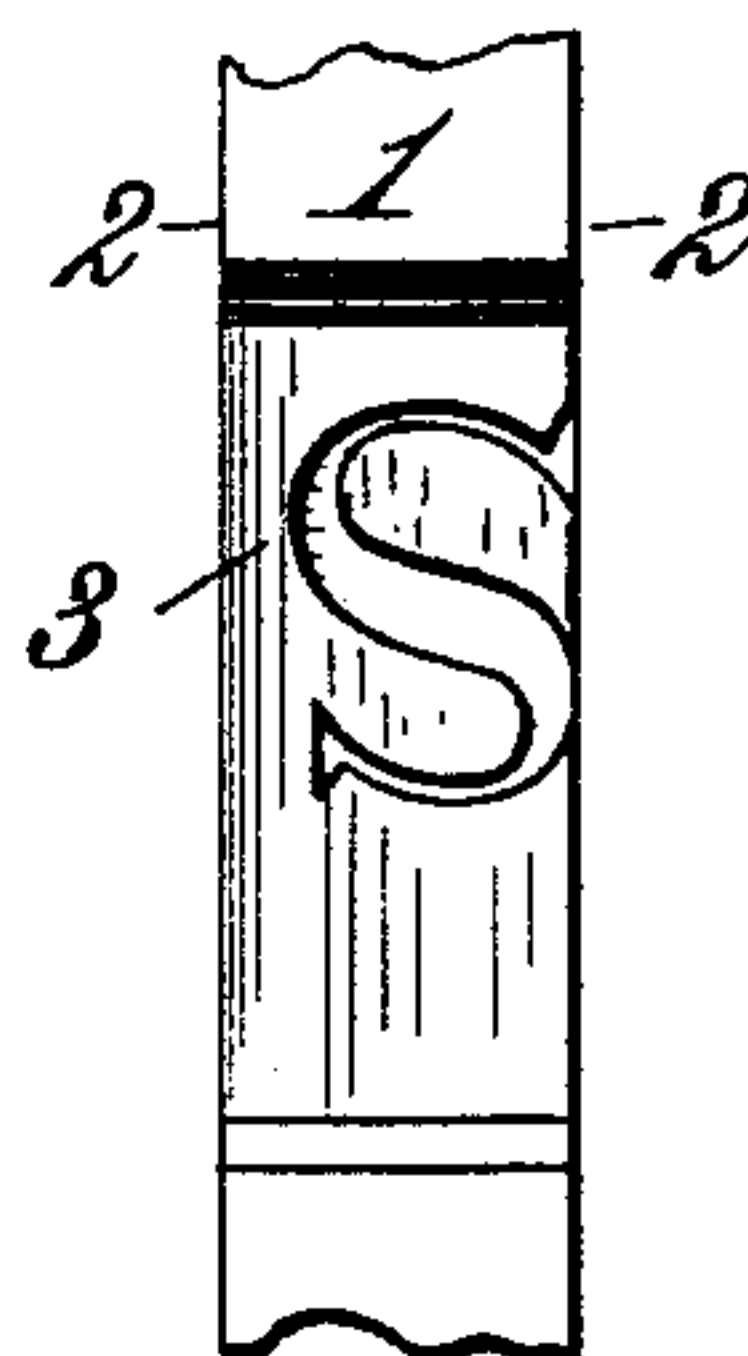
*Fig. 6.*



*Fig. 4.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

ALEXANDER S. CAPEHART, OF BISMARCK, NORTH DAKOTA.

## MATRIX FOR LINE-CASTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 591,947, dated October 19, 1897.

Application filed January 14, 1897. Serial No. 619,203. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER S. CAPEHART, a citizen of the United States, and a resident of Bismarck, North Dakota, have invented certain new and useful Improvements in Matrices for Line-Casting Machines, of which the following is a full, clear, and exact specification.

This invention relates to matrices designed for that class of type-setting and line-casting machines wherein the matrices, either in the form of individual matrix-plates or in the form of bars each having a plurality of intaglios, are stored in a magazine from which they are released by finger-keys and by suitable devices assembled in a line from or by which to cast a type-high printing-bar. In the ordinary manufacture of this class of matrices the intaglios are produced centrally in the edges of the bars or plates in such manner that each intaglio is closed at the sides by side walls forming parts of the parallel side surfaces of the bars or plates. These side walls are the weak points of the type-characters in that they are more or less easily disturbed, and if disturbed the accuracy of the intaglio is destroyed to a greater or less degree, which prevents its being used in the production of type-bars possessing the high perfection desired in the printing art. The side walls of the intaglios are sometimes very thin, and especially is this the case at the points where the serif-lines or kerns of the type-characters are closed at the sides of the matrix bar or plate, as at such points the walls are usually exceedingly delicate or thin and easily broken, crushed, or disturbed.

In many intaglio type-characters the walls at the ends of the serifs and kerns are broken, crushed, or disturbed during the circulating or other movements of the bars or plates in the machine, though they are more likely to be injured when the line of assembled matrices is compressed or expanded by the spacing mechanism, due in a large measure to the fact that the matrix bars or plates are repeatedly used in the casting operations and small quantities of the metal from the casting-pot deposit and collect at the sides of the bars or plates in juxtaposition to the intaglio characters, thus creating lumps of greater or less elevation which crush or disturb the side

walls of the intaglios in contiguous bars or plates when the assembled line is compressed or expanded. This is a serious objection, particularly at the ends of the serifs and the sides or ends of kerns in condensed type-characters, as the walls of these are very thin.

The chief objects of my present invention are to avoid the serious objection referred to and to increase the life and usefulness of matrix bars or plates designed for line-casting machines, particularly those bars or plates having condensed type-characters with serifs or kerns. These objects I accomplish by so producing the intaglios in the edges of comparatively thin bars or plates that each character possessing a serif will be minus a wall or boundary of metal at one end of the serif, and have a wall or boundary of metal at the opposite end thereof measurably greater in thickness than usual in such manner that the open end of the serif of one intaglio will be closed and perfected in form for the casting of a perfect relief type-character by the side of a contiguous matrix-bar, or a space-bar, or a blank bar or quad, or by a solid part of the line-casting machine, such as one of the clamps or jaws between which a line of matrix bars or plates is assembled and justified.

The invention is illustrated by the accompanying drawings, in which—

Figure 1 is an edge view, on an enlarged scale, of a portion of a matrix bar or plate provided with the intaglio letter "H" and constructed according to my invention. Fig. 2 is a side elevation of the same. Fig. 3 is an edge of a portion of a matrix bar or plate having the intaglio letter "h." Fig. 4 is a similar view showing the bar or plate provided with the intaglio letter "o." Fig. 5 is a similar view of a bar or plate having the intaglio letter "S," and Fig. 6 is a detail perspective view showing a portion of a Scudder matrix-bar provided with the intaglio letter "t."

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, it being understood that the improvement resides in the characteristic or peculiar construction or arrangement of the intaglio type-characters, and that it is useful in connection with matrix bars or



plates designed for the Scudder monoline, or the Rogers machine, or the linotype, for which reason I believe that the illustration in the drawings is sufficient for the purpose of explanation.

The matrix bars or plates are ordinarily comparatively thin plates or strips of brass or other suitable metal having parallel sides and so constructed and provided with such means, as well known, that they can be released from a magazine by finger-key mechanism, assembled in a line of composed matter from or by which a printing-bar is cast, and then distributed or carried back to the magazine. The bars or plates are each constructed in the edge 1 with an intaglio type-character (one or more) so disposed relatively to the opposite parallel sides 2 that it is nearer one side than the other, and a solid wall 3 is provided at one side of the intaglio of approximately double the thickness of the corresponding wall of an ordinary matrix bar or plate. The depression forming the serif is extended to and opens at the left-hand side surface of the bar or plate, and consequently is minus the wall or boundary of metal ordinarily present at this end in matrices as heretofore constructed. The same remarks apply to the kerns of many, if not all, type-characters. The open end of the serif, or the open side of the kern, either or both, or the open side of the body of the letter or character, requires to be closed for completing the perfect formation of the intaglio and rendering it available in the casting operation to produce a counterpart type-character in relief. This closure of the open part of the serif or kern, or body of the letter, at the side of the intaglio is effected by the thick right-hand side wall to the intaglio of a contiguous matrix bar or plate, or it may be effected by a spacer, space-bar, blank, or a clamp or jaw of the line-casting machine. Any of these parts will provide a firm perpendicular side wall to close the open side part of the intaglio.

The classification of types is so extensive, and the present invention so clear, that it is deemed unnecessary to explain the characteristics of the many different letters, but it is proper to say that the intaglio characters illustrated are only intended as examples of the result possible to secure with all or nearly all intaglio type-characters used in any known line-casting machine for producing type-high printing-bars.

In Fig. 1 of the drawings I have selected the letter "H" as an example of a Roman capital letter constructed in the edge of the matrix bar or plate so that two of the serifs are open or minus a wall at one end, these open ends being indicated by the numerals 4, Fig. 2.

In Fig. 3 the bar or plate is provided with the lower-case type-character "h," and in Fig. 4 with the lower-case type-character "o," while in Fig. 5 the Roman capital "S" in in-

taglio is represented and in Fig. 6 the lower-case type-character "t."

The present invention is particularly useful where the matrix bars or plates are provided with condensed type-characters, as in such intaglio the side walls of the latter are exceedingly thin and are quickly broken down, crushed, or damaged by contact with one another.

By my invention the side wall at one side of the intaglio will be made of comparatively great thickness, as at 3, while the very weak points ordinarily present at the ends of the serifs, kerns, or body portions are avoided and the life and usefulness of the intaglios are materially extended.

In intaglio characters similar to the intaglio letter "o" represented in Fig. 4 the greatest width of type-face is at the curved or rounded side parts, which are usually very thin-walled at certain points, but according to my invention there is no wall at one side, while there is a comparatively thick wall 3 at the opposite or right-hand side. This example of type-character is selected to show that a part of the body of the intaglio letter, ordinarily having a thin weak point in its side wall, may be made without this weak and objectionable point.

In Fig. 5 the Roman capital "S" in intaglio is illustrative of a class of letters where one end of a serif and also a part of the body of the intaglio may be constructed without walls.

The production of the intaglio characters may be effected by cameo or male dies of any construction suitable for the purpose in hand, but as this constitutes no part of my claim, and as the intaglios may be stamped by dies or otherwise formed, I do not deem it necessary to more fully explain the same.

In the practicable use of matrix bars or plates constructed according to my invention the first bar or plate released from the magazine and minus a wall at a part of the left-hand side of the intaglio character will lie flush against one side of the assembling-box or clamp or jaw of the machine in which the line is composed. The next matrix released will lie flush against the first-mentioned bar or plate, and the thick right-hand side wall to the intaglio of the first bar or plate will close the open side part of the intaglio in the second bar or plate, and so on throughout the line, except that at certain points a spacer or spacers, or a blank bar or bars, may serve to close the open side or sides of an intaglio or intaglios.

I have described my invention with reference to a matrix bar or plate having an intaglio character or characters in one edge only, but I may place the intaglios in both edges of the bar or plate, in which event the faces of the intaglio type in one edge may differ from the faces of those in the opposite edge.

The views in the drawings are magnified



or made on an enlarged scale for the purpose of more clearly illustrating the invention.

Having thus described my invention, what I claim is—

5 1. A type-matrix having a part of the intaglio character open through one side surface thereof, substantially as and for the purposes described.

10 2. A matrix bar or plate having an intaglio character in its edge placed bodily nearer one side than the other with a part of the intaglio open through one lateral surface of the bar or plate, substantially as and for the purposes described.

15 3. A matrix bar or plate having parallel sides and provided with an intaglio type-

character with a part open through one lateral surface of the bar or plate, substantially as and for the purposes described.

4. A matrix bar or plate having an intaglio 20 type-character opening laterally through a side surface of the bar or plate and provided with a thickened wall at the opposite side, substantially as and for the purposes described.

In testimony whereof I have hereunto set 25 my hand in the presence of two subscribing witnesses.

ALEXANDER S. CAPEHART.

Witnesses:

GREGORY PHELAN,  
GEO. W. ROOSEVELT.