

(No Model.)

R. A. BUSCH.

METHOD OF MANUFACTURING SHEET METAL SIGNS.

No. 446,427.

Patented Feb. 17, 1891.

FIG-1-

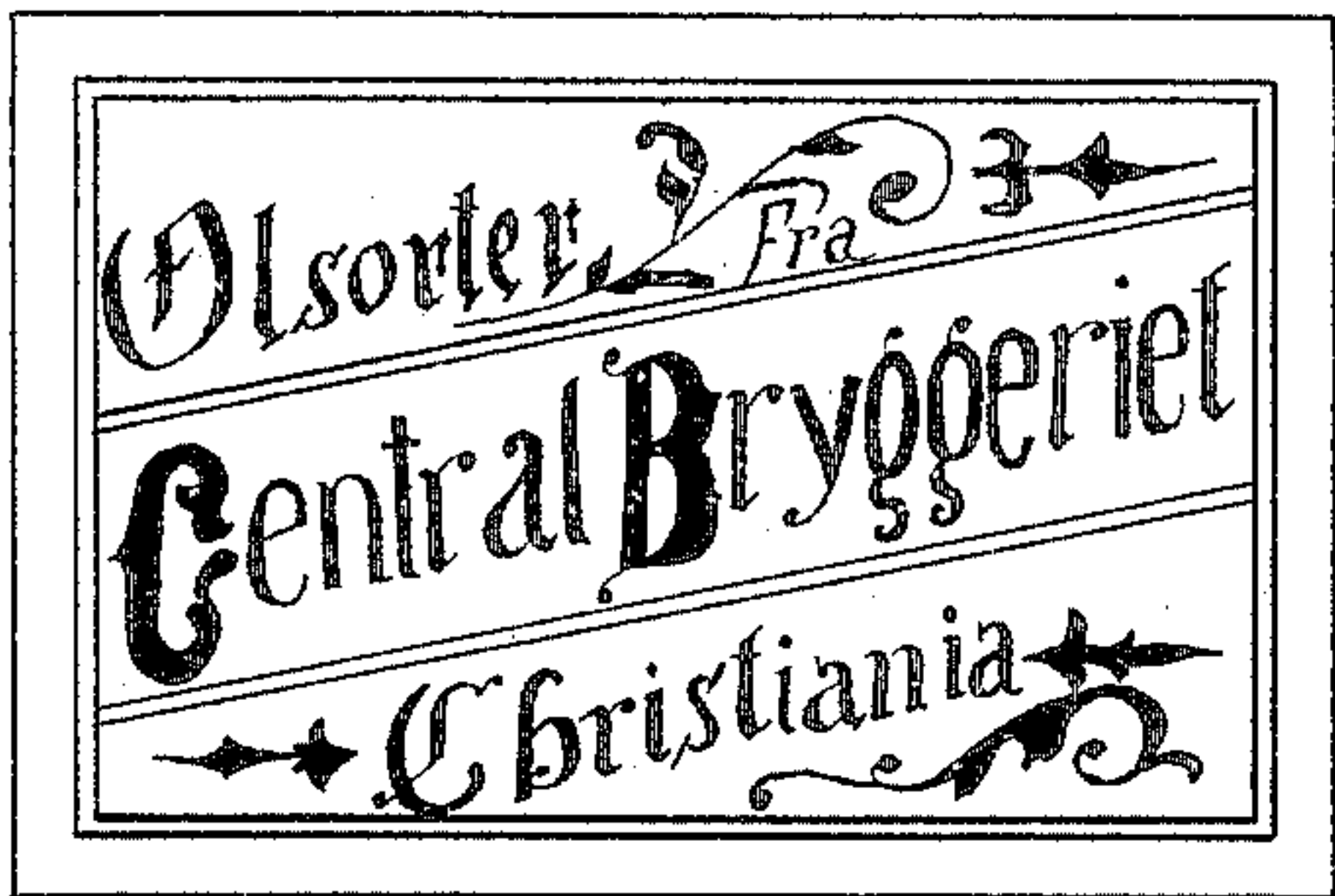


FIG-5 -



FIG-2 -

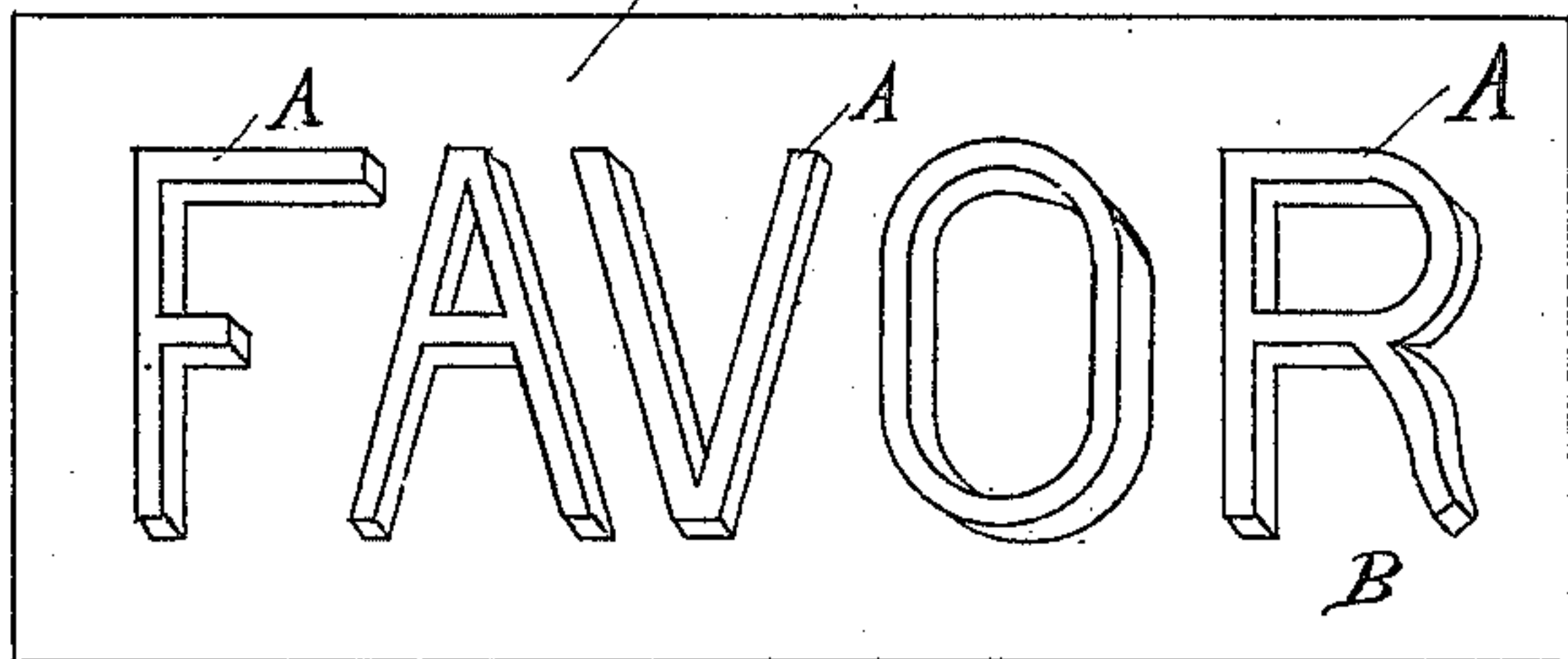


FIG-3 -

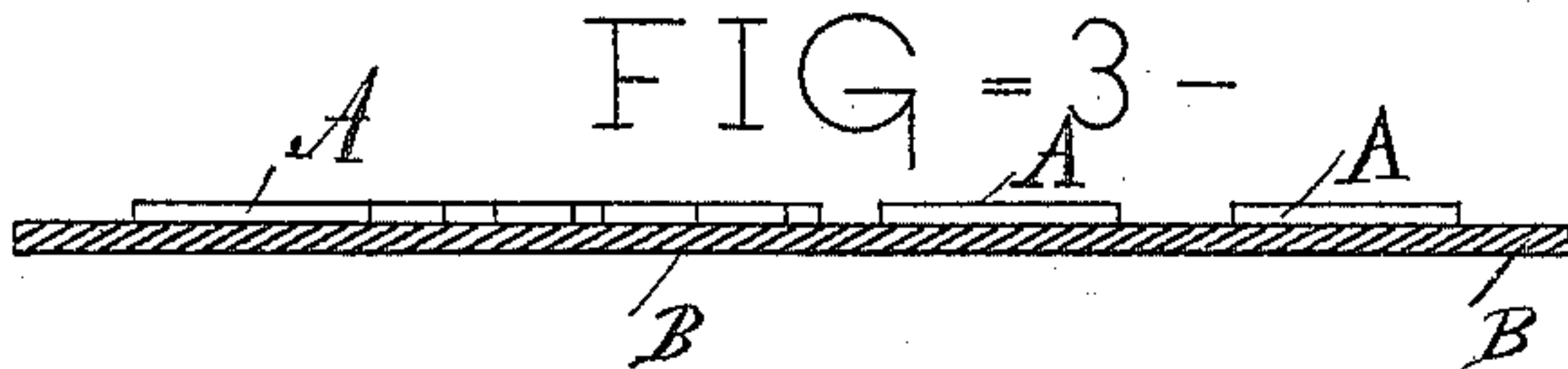


FIG-4-

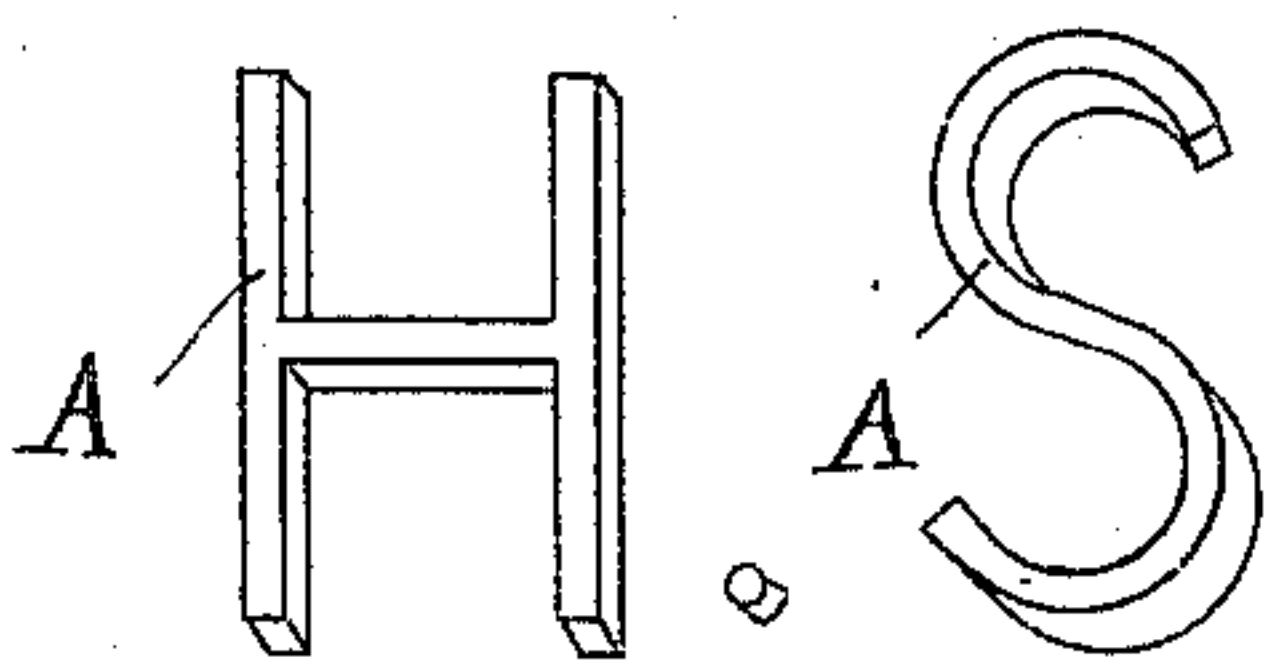
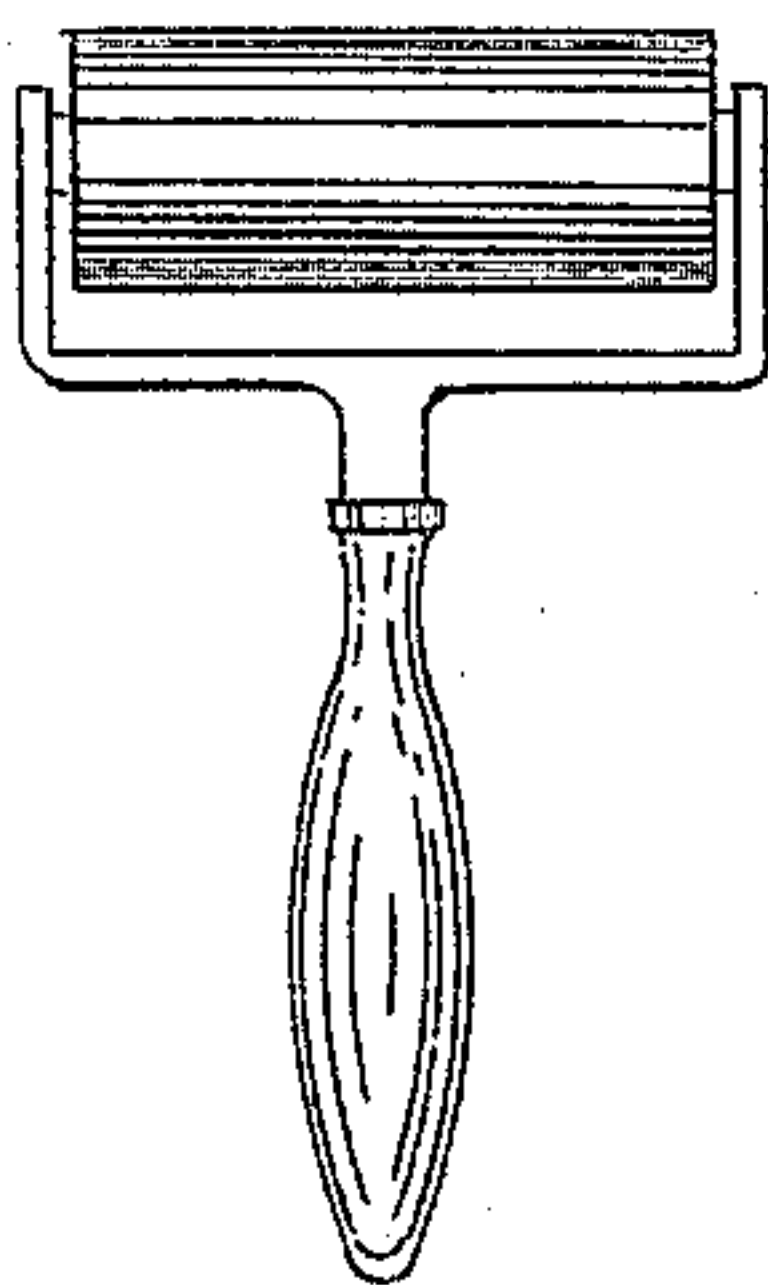


FIG-6-



Witnesses
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UNITED STATES PATENT OFFICE.

RICHARD ALFRED BUSCH, OF DRESDEN, GERMANY.

METHOD OF MANUFACTURING SHEET-METAL SIGNS.

SPECIFICATION forming part of Letters Patent No. 446,427, dated February 17, 1891.

Application filed April 8, 1890. Serial No. 347,142. (No model.) Patented in England November 8, 1889, No. 17,832.

To all whom it may concern:

Be it known that I, RICHARD ALFRED BUSCH, a subject of the King of Saxony, residing at Dresden, in the Kingdom of Saxony, in the Empire of Germany, have invented certain new and useful Improvements in the Means, Appliances, and Methods for Manufacturing Sheet-Metal Signs, (for which I have obtained Letters Patent in Great Britain, dated November 8, 1889, and numbered 17,832;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use it, reference being had to the accompanying sheet of drawings, which form part of this specification.

My invention consists of an improved method of producing embossed metal advertising-signs or designs of sheet metal with the words or representations of any object or objects in relief and the representations receiving a printed coat of varnish and color to cover the embossed object.

In order that the nature of my said improvements may be more fully understood, I will first proceed to describe the various figures on the sheet of drawings hereunto annexed, all figures of which are marked with like letters of reference throughout.

Figure 1 shows a mold of plaster formed in one piece, upon which the design is in the first instance sketched, traced, or transferred from the original drawing and then sharply cut out to a certain depth by means of a style or other tool or tools, so that it appears well in relief, from which a sand or other mold is taken and a casting obtained therefrom in iron or other like hard metal, which forms a type-body or an entire and complete punch. Fig. 2 exhibits another form of punch, such as I generally purpose to use in producing my embossed metal signs, and which is composed of individual brass letters A A cut out of sheet-brass by means of a saw or otherwise shaped and then attached or secured by cement to a flat sheet or base of metal B. Fig. 3 is a longitudinal section showing the letters A A so connected and as in relief on the iron plate; and Fig. 4 shows the detached letters or characters A A cut or stamped out before

being mounted on the metal bed, as shown at Fig. 3, and not having any block or base. Fig. 5 shows an embossed metal sheet in its entirety after undergoing the various processes of coloring, varnishing, and drying, and as ready for use. Fig. 6 is a small roller, as required by preference to be used.

Instead of the ordinary methods adopted and that have been proposed in making embossed sheet-metal signs or designs, and also that of casting iron pipes, I form by my invention a complete stamp made of one piece of metal in the following manner:

A mold of plaster is made to the size of the sketch or design, which is brought onto this plaster mold, and the letters and objects cut out by means of a style, so that they appear as if in relief on the surface of the mold. After this a sand mold is prepared and a casting made from it of iron. The plaster mold, as described, being of one piece, is very easily worked, and the cost of producing such complete iron punches or stamps is but small, and they are capable of being worked to a very large extent.

I am aware that it has been proposed to form letters and designs out of sheet-zinc, and by means of a sand mold forming the punch of cast-zinc, which is found in practice to become soon worn, and that it is impossible to stamp large quantities of plates with a zinc casting which is so unenduring.

By using an iron punch I can stamp one hundred thousand plates without requiring a fresh punch, whereas if a zinc cutting were used several punches would be required. I do not propose to use steel punches with engraving, but iron ones, with the letters and representation in relief. I propose to form the matrix by a sheet of strong pasteboard, from which the advertisement or design is cut out by means of a saw or other approved means, the remaining part of the pasteboard then pasted on a second sheet of pasteboard, and this matrix will be found to serve the working of a large number of plates.

Although I have before described the method of making a solid iron punch, I only propose to use a punch so constructed when I require to make a very large quantity of the metal plates, and in case of only desiring

to manufacture an ordinary number of plates I construct my punch according to the following manner:

I cut out my letters or designs in sheet-brass by means of a saw or other suitable appliance and attach them onto a sheet of metal by means of cement in such a manner that they shall represent the whole of the design of the metal plate which I desire to emboss. These individual letters, objects, or designs are not formed as ordinary type, and have no spaces, iron chases, or screws erected, but are simply attached to a sheet of metal and the punch is complete. This punch is afterward fixed to the table of an embossing-press by means of wax, when the stamping of the plates may be proceeded with. I wish it to be understood that this is the ordinary method which I propose to use, although I may, as before stated, cast my punch in solid iron. The matrix would in this case likewise be made of pasteboard, as above described. The metal sheet is then placed in a suitable position upon the aforesaid punch, and everything being prepared, the matrix having been fixed with wax to the stamp, the stamp is lowered down, whereupon the designs, letters, and representations will be embossed on the sheet-metal plate. By using pasteboard for the matrix the outlines of the designs and letters will be produced much sharper and better than if india-rubber or lead be employed, and this result is obtained with one single blow. It is not necessary to lower down the stamp two or three times, as is the case when using india-rubber or lead for the matrix.

The varnishing of the embossed metal plates is done in the same way as with flat metal sheets. The varnish being perfectly dried the color is applied to the surface of the letters and designs by means of a roller which is formed of a frame having a wooden roller mounted upon it. This roller is thickly coated with a mixture of glue and treacle. In use the roller is first uniformly covered with lithographic varnish color, and then rolled to and fro over the embossed letters and designs until the entire surface of the same is perfectly covered.

When the letters have to be produced in various colors, there will be as many metal stencils needed as the different colors to be produced upon the metal plate. These metal stencil-plates are of very thin metal, and the letters to be colored are cut out by means of a saw. The use of the zinc cliché is avoided, for the plates being made of strong metal and lying closely one in the other there is no possibility of the embossed letters or designs getting flattened, the metal plate being strong enough itself to withstand the slight pressure given by the roller.

By my method of printing letters and designs I do not depend upon the aid of impressions taken from a lithographic stone, as this method is somewhat tedious, and the em-

bossed letters are liable not to be covered by the printing, which is frequently the case by some of the systems at present in use when the printing fails to fit the embossment.

With reference to the coloring of the object or objects designed (in contradistinction to letters formed upon the metal sign) and to be produced, the procedure employed by me is somewhat similar to that adopted in lithography, and consists in taking impressions on paper specially prepared for the purpose from drawings executed on lithographic stones. These impressions have afterward to be carefully adjusted over the flat space where the embossed representation is to appear, or over the already raised representation, and when effected the said impression is pressed and taken onto the embossed portion of the plate by a slight pressure or blow of the embossing-machine. The paper is then moistened and stripped off, when the colored portions of the impression are left firmly attached to the object or design.

In practice I take first one color from the lithographic stone onto my transfer-paper and wait till it is dry, and then take another color onto the same paper, and so on till all the colors are on the transfer-paper which I wish to put upon the design which is formed upon my metal sign. I then transfer these colors from the paper to the metal plate, as before described. This enables me to put all the colors onto the designs upon the metal sign at one and the same time.

Although I have here explained the method by which I propose to color my metal signs, I wish it to be understood that these processes form no essential part of my invention, and I believe they have been in use for some time.

The method of manufacture just described refers to plates of which quantities have to be executed, but would be varied somewhat if but one or a small number of plates were required, and in the latter case the plates would by preference be made of zinc and the letters raised to about a quarter of an inch in height, and the plates may be of one piece of sheet metal up to a certain size, say about eighty by forty inches; but in extra large sizes they would be composed of different sheets and combined by means of soldering together or otherwise. These single plates, if required to appear as in a frame, instead of having a simple edging or leading formed around same, would be first stamped and afterward fixed to the frame, which is stamped separately.

For the single plates the punch may or would be composed of individual letters fixed onto a sheet of metal. These letters are first cut out of wood by means of a saw, and then cast by a brazier. The matrix for these single plates may be formed by a sheet of linoleum or other suitable means.

Having a reserve of individual letters in stock I am able to use them for any plates, as I likewise may to a certain extent use

ordinary brass letters for forming different punches without needing to cut out new letters. I am thus enabled to compose a punch of any style of letters either in straight or 5 curved lines, which cannot be done when letters are fixed individually to a square base. It will thus be seen that in the course of business I amass together a large number of individual letters of all styles, which enables me 10 to produce my punches in a very economical manner.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

15 The method of producing embossed relief-letters, designs, or representations of objects on sheet metal, consisting in separately forming the different parts of the design and at-

taching them to a ground plate and in forming a hard and solid punch by means of a 20 mold taken from said ground plate with its parts of the design, said punch working in combination with a matrix formed by fastening a sheet of strong pasteboard from which the design is suitably cut out to a second 25 sheet of pasteboard for the purpose of providing the sheet metal with sharply-embossed pattern, as described.

In testimony whereof I sign this specification in the presence of two subscribing witnesses. 30

RICHARD ALFRED BUSCH.

Witnesses:

EHRENFED EDELMANN WAGNER,
CARL LEBERECHT,
Both of Dresden.