(No Model.)

J. H. FERRIS & C. M. KIPP.

EMBOSSING PLATE OR DIE.

No. 350,876. Patented Oct. 12, 1886.

Fig. 1.

Fig. 2.

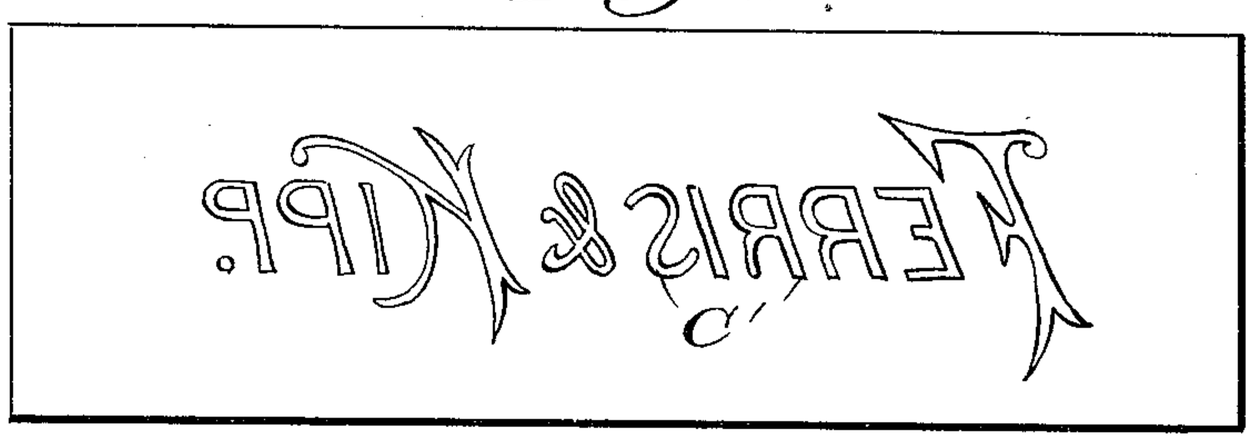


Fig. 3.

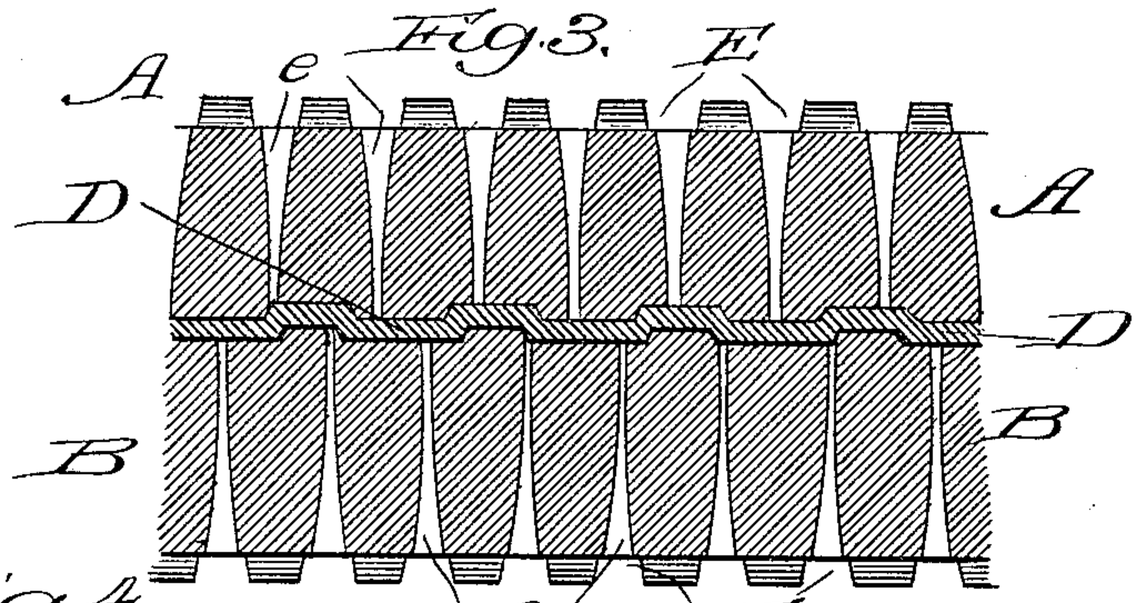
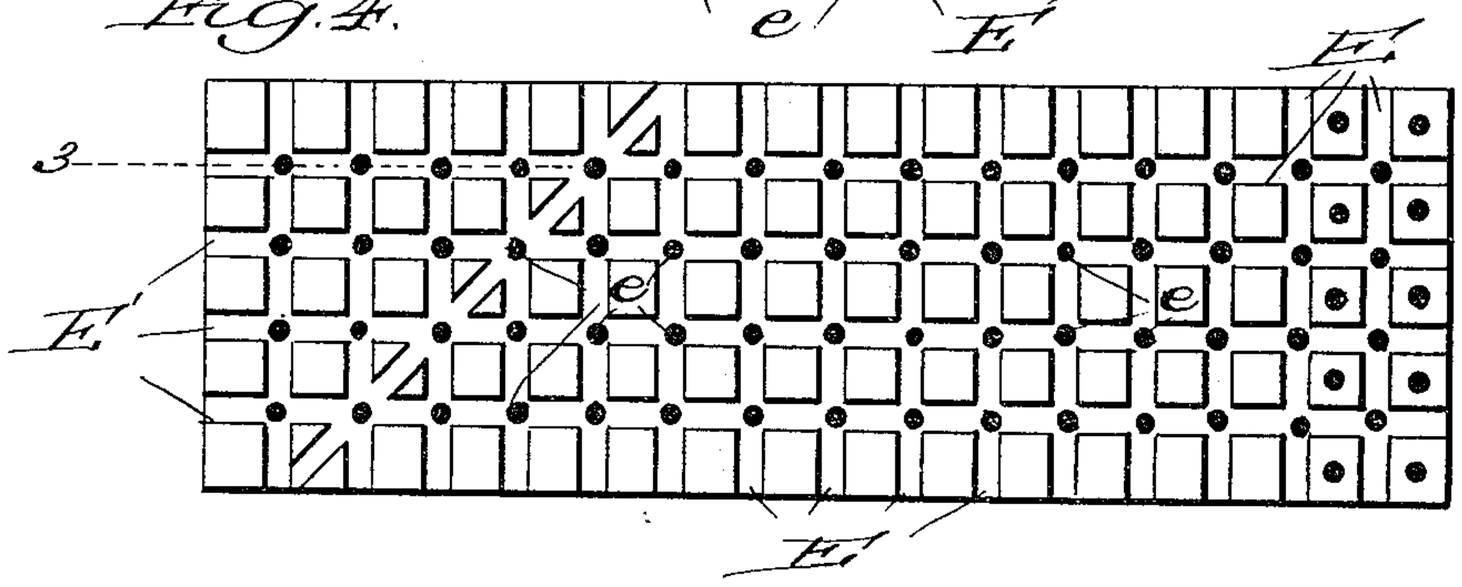


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN H. FERRIS AND CHARLES M. KIPP, OF CHICAGO, ILLINOIS, ASSIGNORS OF ONE-HALF TO J. C. McCANN, OF SAME PLACE.

EMBOSSING PLATE OR DIE.

SPECIFICATION forming part of Letters Patent No. 350,876, dated October 12, 1886.

Application filed December 26, 1885. Serial No. 186,527. (No model.)

To all whom it may concern:

Be it known that we, JOHN H. FERRIS and CHARLES M. KIPP, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Embossing Plates or Dies, for use in the process of making embossed signs, letters, trade-marks, or ornamental designs having raised and depressed surfaces; and we do hereby declare that the following is a full, clear, and exact description of our said invention, when taken in connection with the drawings accompanying the same, and forming a part hereof.

The purpose of our invention is to secure a plate or die suitable for the production thereby of an embossed sign or design having raised and depressed surfaces, and composed of straw board or pulp, or other like material, the said embossed surface to be of any desired superficial area, the raised parts or portion thereof in bold relief, and all free from cracks, breaks, or other marks not appearing on said plate or die; and the said plates or dies herein set forth and described to be so constructed that by the application of a sufficient amount of pressure and artificial heat thereto, and to the material between the same, an exact reproduction thereof may be rapidly obtained upon the upper and under surfaces of the straw board or pulp used for such purpose.

Figure 1 is a plan view of the upper surface of one of our improved plates or dies. Fig. 2 is a plan view of the upper surface of a second or negative of our improved plates or dies. Fig. 3 is a cross-section of said dies. Fig. 4 is a plan view of the back or under surface of our improved plate or die.

Like letters refer to like parts throughout the several views.

A is the depressed part or portion of one plate or die. C is the raised part or portion of the same plate or die. B is the raised part or portion of the other plate or die. C′ is the depressed part or portion of the last-named plate or die. D is the material between said plates or dies. E E′ are grooves on the back surface of either of said plates or dies. *e e′* are holes from different places or positions in said grooves through said plates or dies. Holes *e e′* are of small diameter on the upper surface, or that surface of the two plates next adjacent to the other when the plates are in use, as illustrated in Fig. 3, and preferably of larger diameter on the back of said plates, or the under surface thereof, and may gradually taper from one surface to the other, or may have parallel sides of a given diameter a portion of the way through said plates, and a smaller diameter the remainder of the distance through the plates to the upper surface thereof.

The function of grooves E E′ and holes *e e′* is hereinafter more fully set out and described.

The completed sign or design obtained by the process in which the herein-described plates or dies are used (being formed of a sheet or sheets of straw or wood pulp which have been wetted and subjected to suitable pressure and heat between said plates) is of a nearly-uniform thickness; and the two plates or dies are applied the one to the face and the other to the back of said sign or design, and hence are termed by us the "positive" and the "negative" plate, respectively. The raised portion of the positive plate is, when the two plates are superimposed, opposed to the depressed portion of the negative plate.

The method or manner in which the plates are constructed, in order to obtain in the negative plate (which is the plate coming in contact with the surface of the embossed sign or design manufactured or obtained by the process in which the plates are used) the necessary workmanship and finish required, and in an economical manner, and for other reasons, is as follows: The plate illustrated in Fig. 1 (the "positive plate," so-called) is built up or engraved in the required designs and styles and a casting thereof obtained. The upper surface of said casting is then planed and otherwise finished to present the exact appearance desired to be given the completed embossed surface, and type or other like metal is then poured upon said plate to the desired thickness, forming the negative plate, the positive plate being sufficiently warmed to allow the molten metal to flow freely over the same without being "chilled," as it is termed by us, before the metal required for the said negative plate has been poured thereon. Small holes

are then drilled in one or both of said plates from the upper surface thereof a portion of the distance through said plates; or, if preferred, a hole of larger diameter is drilled partially through the plates from the back thereof, and from the bottom of said larger holes holes of a smaller diameter are drilled through the remainder of said plates. In case the holes of small diameter are drilled from the front of the plates, as first named, the holes may be continued throughout the whole body of the plates in order to form a guide for the drilling of the larger holes. Grooves are then cut on the back of said plate or plates connecting the said holes, and to the edges of the plates, forming channels. It is evident that the holes may be of a uniform diameter through the entire body of said plates without changing the function of said holes; but as the object of said holes is to allow the steam formed by the rapid heating of the material between the plates, while under a suitable degree of pressure, to escape from the body of the wetted and heated mass, and as said holes are of small diameter on the surface of the plates, so that no considerable portion of the wetted and heated mass may enter them, we prefer, in order that a free passage be allowed said steam, to make the holes of larger diameter a portion of the way through the plates, or to taper said holes, as previously described.

In certain of the designs made by us we prefer to omit the holes in the negative plate or die, in order to avoid the appearance on the surface of the embossed article of the little teats formed by the wood pulp or straw-board entering a short distance therein while under pressure and subjected to artificial heat, as named.

Having described our invention, its construction and method of operation, what we claim, and desire to secure by Letters Patent, is—

1. The combination, with embossing plates or dies, of holes *e e'*, and grooves E E' on the back thereof connecting said holes, and to the edges of the plates or dies, substantially as described.

2. In embossing plates or dies, the combination, with holes passing through said plates, of grooves connecting said holes, and to the edges of said plates, substantially as described.

3. In embossing plates or dies, the combination of holes through said plates and of a larger diameter a portion of the way, with grooves connecting said holes, and to the edges of the plates, substantially as described, and for the purpose set forth.

JOHN H. FERRIS.
CHARLES M. KIPP.

In presence of—
J. C. McCANN,
CHARLES T. BROWN.