

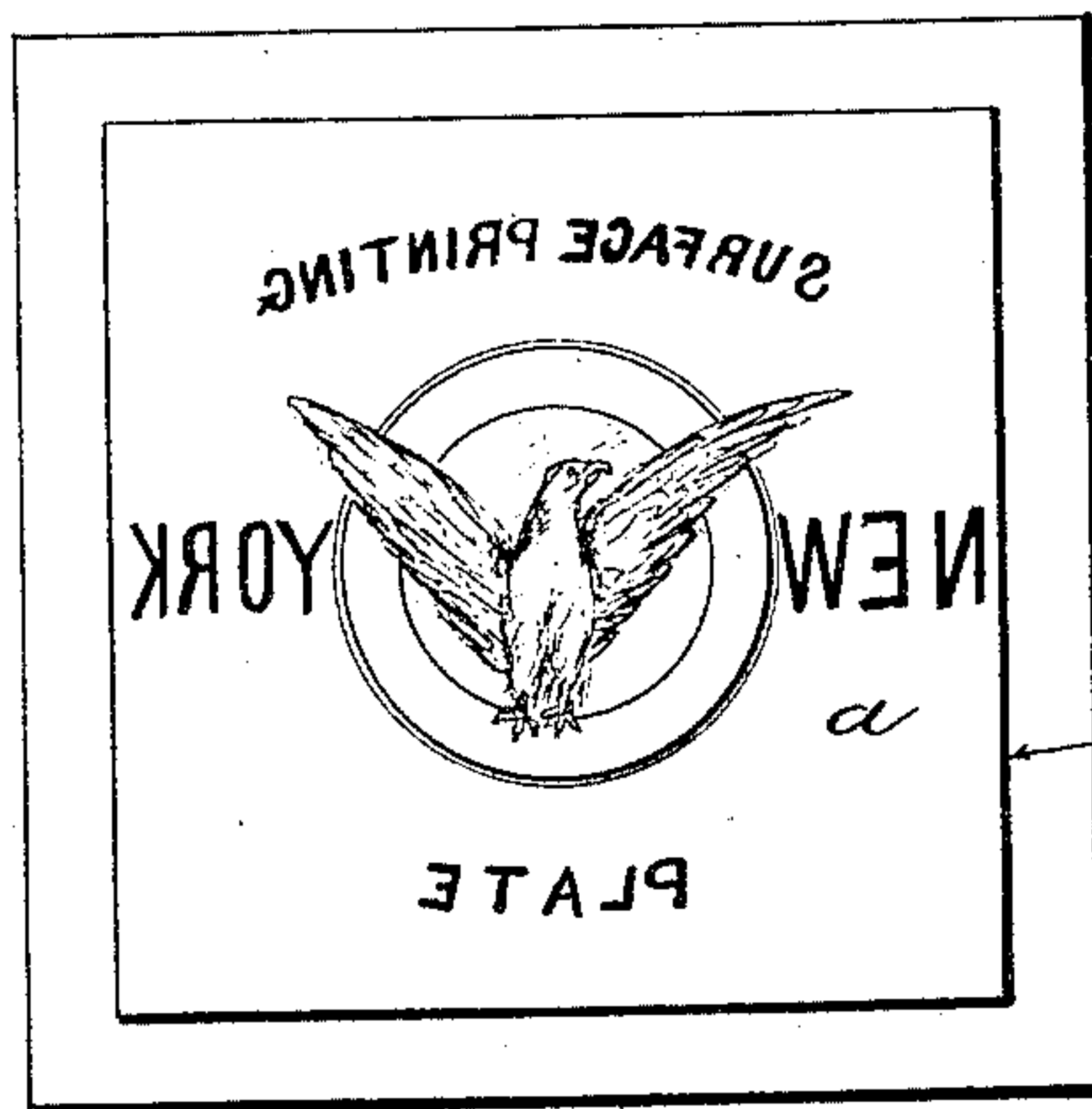
(No Model.)

J. MULLALY & L. L. BULLOCK.  
PRINTING PLATE.

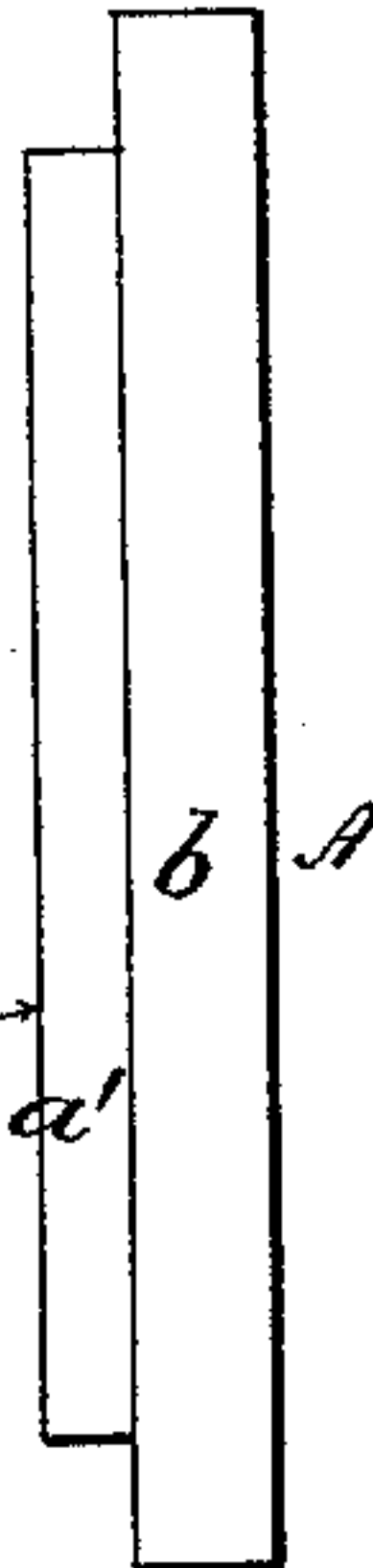
No. 459,239.

Patented Sept. 8, 1891.

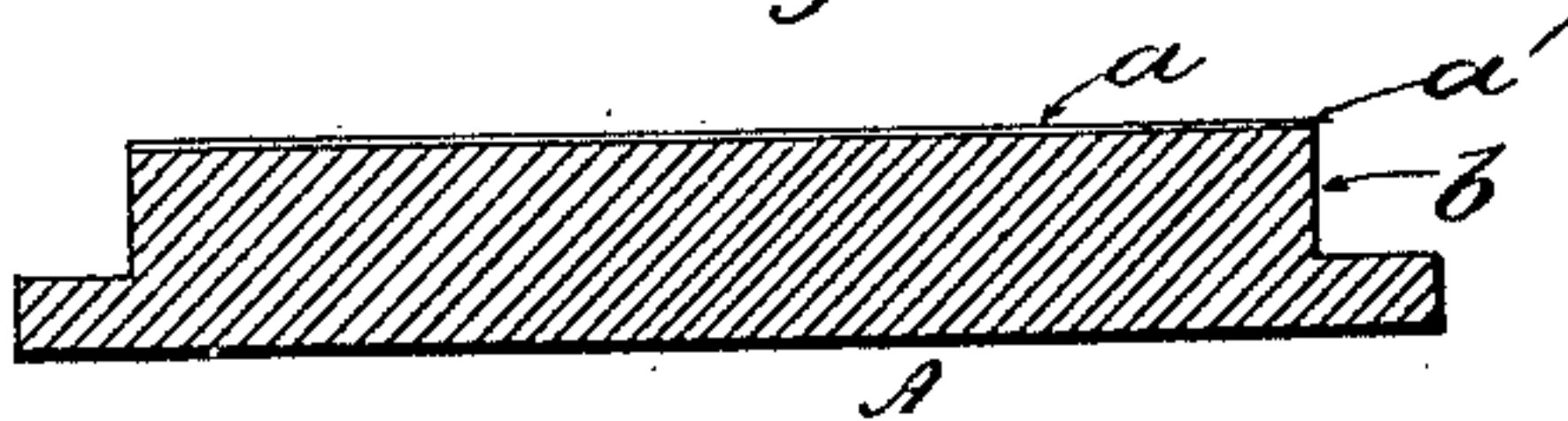
*Fig. 1.*



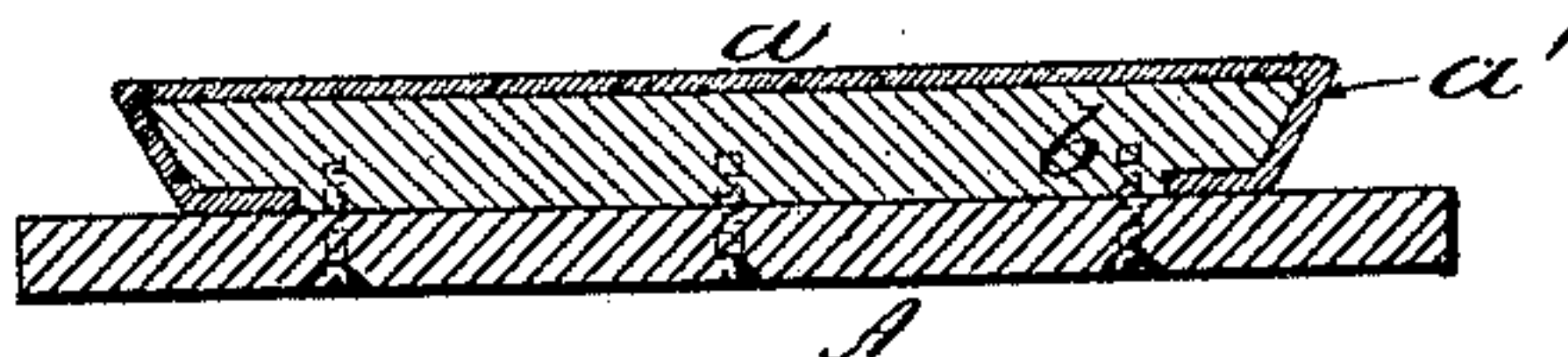
*Fig. 2.*



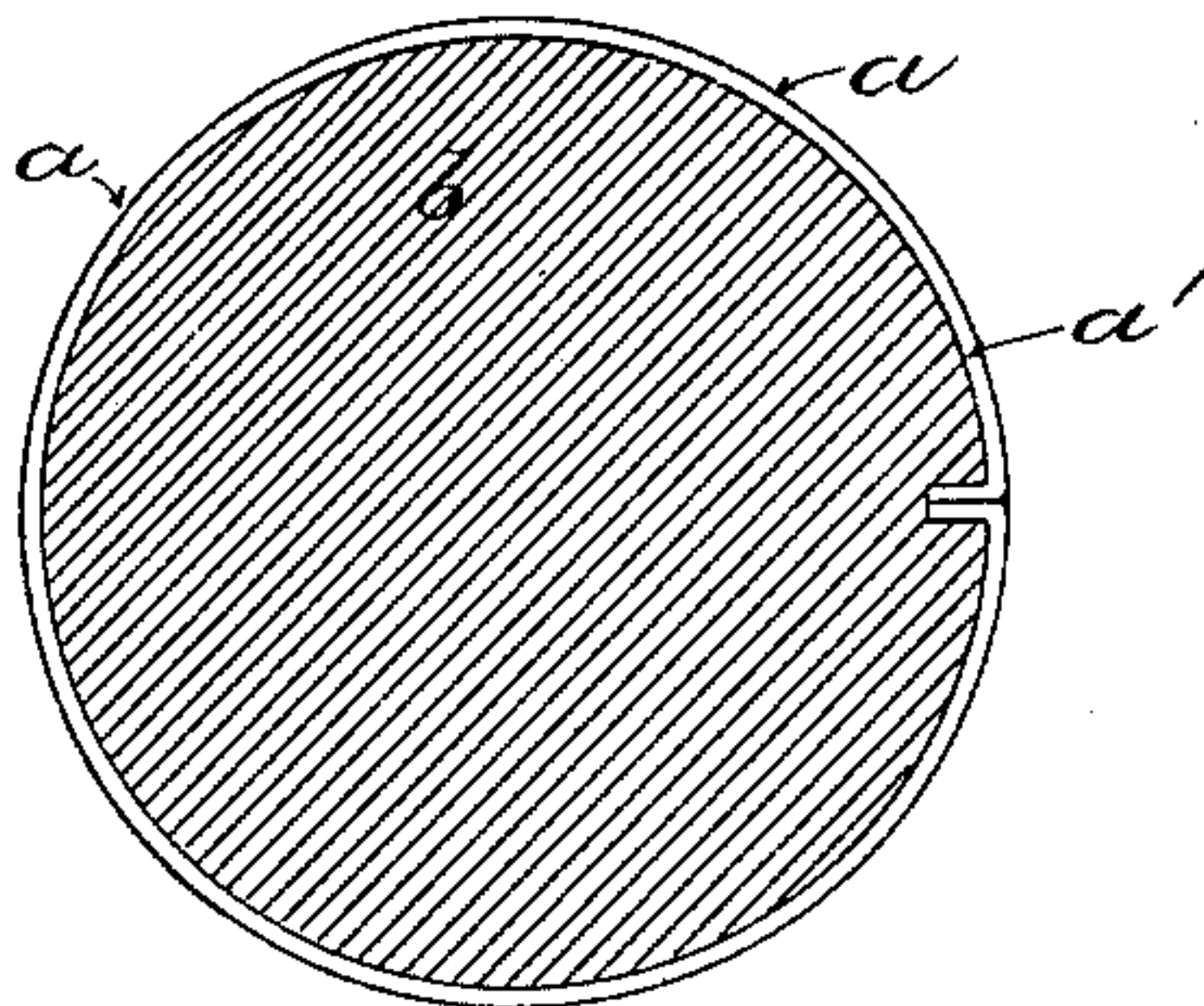
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

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## PRINTING-PLATE.

SPECIFICATION forming part of Letters Patent No. 453,239, dated September 8, 1891.

Application filed May 19, 1890. Serial No. 352,341. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN MULLALY and LOTHROP L. BULLOCK, citizens of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Printing-Plates, of which the following is a description sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

Our invention is designed, principally, to afford a perfect substitute for the lithographic stones heretofore used in surface-printing, although our improved plate is adapted to other styles of printing, and is equally a substitute for other forms of surface-printing plates, as steel and copper plates, &c.

The unavoidable and objectionable weight and bulk of the lithographic stones, as well as their comparatively great cost and fragile nature, are disadvantages attending their use never heretofore overcome, although frequent attempts have been made to supersede the lithographic stone. The peculiar texture and absorbent qualities of the stone having never been duplicated practically prior to our invention, the expense of procuring, preparing, transporting, and handling the natural stones has necessarily made this form of printing expensive as compared with letter-press and other forms of printing, and one of the results of our invention will be to revolutionize commercial and other cheaper forms of printing by rendering the peculiar effects and embellishments of lithographic printing available for cheap general printing of all kinds.

Our invention consists, broadly, in the use of a printing-surface composed of substantially pure aluminium, which, as we have demonstrated by practical experiment and investigation when suitably prepared, possesses the leading qualities of the lithographic stone, the texture being fine and absorbent and being susceptible of treatment like the natural stone, while affording equal if not superior results in fineness and perfection of detail in printing. With a printing-surface equivalent in quality and effect to the lithographic stone the advantage of a metallic plate as a substitute therefor are obvious and numerous. The greater strength and durability of the metal, its universal availability,

comparative lightness, and ease of manipulation, as well as its resistance of the chemical action of acids, all render our aluminium plate of unusual practical utility and importance as compared with printing surfaces and plates heretofore known and used.

As far as the practical embodiment and use of our invention is concerned, it is immaterial how our improved printing-plate is constructed provided the printing-surface is of aluminium, the essential feature in this respect being a plate or layer of aluminium of sufficient thickness to afford the peculiar qualities of porosity, &c., inherent in the metal; but as these qualities of the metal are inherent in a layer or plate of almost imperceptible thickness the quantity of aluminium necessary for the formation of a suitable printing-surface is comparatively small, and the aluminium surface may therefore be obtained upon another cheaper metal by electrolysis, or a thin layer of aluminium may be mounted upon and re-enforced by a backing of metal or other suitable material applied in any well-known manner.

Another important advantage we attain by the use of our improved printing-surface of aluminium as compared with the use of lithographic stones is that we are enabled to make the printing-surface conform to any desired curvature or to make it completely cylindrical, the latter form opening the way to an entirely new development in this class of surface-printing, since all the advantages of speed, economy, &c., attendant upon rotary cylinder-printing as compared with flat or plate printing may be combined with the superior results and effects heretofore attainable exclusively at comparatively great expense by lithography.

In the accompanying drawings we illustrate the embodiment of our invention in practical form, although we do not confine ourselves to any special form or construction of parts, since it is obvious that various modifications in detail may be introduced without departing from the essential spirit of our invention.

Figure 1 is a plan of a flat printing-plate with aluminium printing-surface upon which a design has been imposed; Fig. 2, an edge view of Fig. 1; Fig. 3, a sectional view indicating a plate of metal or other suitable ma-



terial provided with a facing of aluminium deposited by electrolysis, the thickness of the aluminium being exaggerated for purpose of illustration; Fig. 4, a similar view showing a sheet of aluminium backed with metal or other suitable material; Fig. 5, a sectional view of a cylindrical printing-roller formed with a printing-surface of aluminium.

The printing-plate A as a whole may be formed or built up in any suitable or well-known manner, provided it is formed with the facing *a* of aluminium. Thus the facing *a* may be afforded by the use of a comparatively thick plate *a'* of aluminium attached to a platen or base *b*, or a comparatively thin layer *a'*, Fig. 3, of aluminium may be applied to the base or platen *b* by electro-deposition. Again, a thin plate of aluminium may be secured to the base or platen *b* by any suitable mechanical means of attachment, as illustrated in Fig. 4, or to the surface of a rotary printing-roller *b'*. (Indicated in Fig. 5.)

In all of the constructions indicated, as well as in the case of others that may be desirable to comply with the requirements of special use, the essential feature is the layer or plate *a'* of aluminium, affording a printing-surface *a* of that metal, and all questions of construction and application are secondary to that.

The surface *a* is prepared for the reception of the design in any of the ways followed in the art of lithography in treating the natural stone, either by polishing or graining it, ac-

ording to the technical character of the work to be performed, the surface of the metal being adapted, like that of the stone, to receive the design either by direct drawing, crayon, transfer, engraving, or etching, as heretofore practiced, and substantially the same processes being resorted to in fixing the design and making ready for printing.

Owing to their comparative lightness and the cheapness with which our plates may be produced, they may be advantageously used as substitutes for stereotype or electrotype plates, the impression of whole pages of printing-matter, &c., being transferred to the aluminium surface *a* and fixed as in the case of original plates prepared for mercantile and other general job-work.

It will be understood that the term "aluminium" is herein used in its ordinary sense—that is, as describing aluminium of commerce and not necessarily pure aluminium.

What we claim as our invention, and desire to secure by Letters Patent, is—

The herein-described plate for use in surface-printing, having a surface of aluminium on which any suitable design has been placed, substantially as described.

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