REPORT OF THE COMMITTEE ON SCIENCE AND THE ARTS.

THE MIMEOGRAPH DUPLICATING SYSTEM AND APPARATUS.

[No. 1410.]

HALL OF THE FRANKLIN INSTITUTE,
PHILADELPHIA, December 1, 1888.

The Sub-Committee of the Committee on Science and the Arts, constituted by the FRANKLIN INSTITUTE of the State of Pennsylvania, to whom was referred, for examination,

THE MIMEOGRAPH DUPLICATING SYSTEM AND APPARATUS, OF
THOMAS A. EDISON, OF MENLO PARK, N. J.,

Report that: The application is made under date of August 15, 1888, by F. Z. Maguire, General Agent for Pennsylvania.

The apparatus is called the Mimeograph, and is intended to be used for duplicating autographic and type-written work, drawings, music, etc. In its operation it is claimed to be an improvement on pre-existing methods of duplicating, including some new features. The principle employed is not new, consisting in puncturing a sheet of paper or similar material with small holes along the lines to be reproduced, thereby making a stencil. This is placed on the surface to be printed, and a coloring material rubbed or pressed on it, so as to be forced through the holes on to the surface below, which is thereby printed.

The apparatus for autographic duplicating, and the operation may be described as follows: There is a hardened steel plate, the surface of which is covered with fine points, to the number of about 200 to the square inch, formed by scoring it with grooves. This plate is made one and one-half inches or three inches wide, and long enough to extend across the width of the stencil sheet, which is to be prepared, and it is set in one end of a convenient wooden frame. A slab of slate, or other suitable material, is set in the

remaining portions of the frame, the top surface of all being flush, and making a level bed. The stencil sheet, which is a thin paper covered with paraffine, is laid on this bed, the part of it to be written on being kept over the steel plate. The writing or drawing, which it is desired to duplicate, is then done with a smooth pointed steel stylus, which is used with about the same pressure and ease as a lead pencil. As the stylus passes over the stencil paper the latter is pressed down on the steel points, so that they are driven through it, making numerous small holes along the lines which the stylus traverses. The stencil thus prepared is placed between the two frames, one of which slides within the other, and is clamped down, so that the stencil is thus stretched smooth and securely held. These frames carrying the stencil are then hinged at one end to the bed, the sheet to be printed is placed on this bed and the stencil brought down upon it. An ink roller, covered with semi-fluid ink, is then passed over the stencil, pressing the ink through the holes which have been pierced in it, down on to the paper below, thus making the desired impression upon it. Printing may be done in this way very rapidly, at the rate of several hundred an hour, and one stencil may be used for as many as 3,000 copies before it is worn out by the enlarging of the holes.

To prepare a type-written stencil: The edges of a sheet of paraffine paper are folded over a piece of coarse silk cloth, back of which is laid a stiffening sheet. They are then passed through a typewriter in the ordinary way, except that no ribbon is used. The type strikes the paraffine paper, driving it against the silk cloth, which is termed "perforating silk." Wherever the type strikes, the paraffine is taken up by the cloth on the other side, and owing to its coarse texture, small holes are pierced through the paper in the lines of each letter. Copies as good as actual type-written work are taken from the stencil thus made by placing it in the printing frame and using the inking roller as before described. From 1,000 to 1,500 copies may be made from one stencil. The type is not at all injured, as in some processes, merely needing occasional cleaning.

The sub-committee has examined the apparatus, its operation and the work produced, and is very favorably impressed with the results obtained. It has also made some investigations into other methods of preparing stencils for printing, and in no instance in the comparison has its judgment been unfavorable to the mimeograph. The method employed of puncturing the stencil sheet from below upward, by pressing upon a slab covered with numerous small points, is believed to be original and worthy of special commendation. Perforations so made, being largest toward the surface to be printed, make a fuller and more continuous line than those made from above. The apparatus is deemed very useful for the purpose for which it is designed, and the Sub-Committee recommend the award of the John Scott Medal to the inventor.

[Signed]

W. R. WHARTON,
JOHN R. McFETRIDGE,
WM. McDEVITT.

Adopted January 2, 1889.

[Signed]

S. LLOYD WIEGAND, *Chairman.*