

# UNITED STATES PATENT OFFICE.

JULIUS FRIEDLAENDER, OF BERLIN, PRUSSIA, AND PETER K. MOELLER,  
OF LEIPSIK, SAXONY.

## IMPROVEMENT IN PRINTING-SURFACES.

Specification forming part of Letters Patent No. **160,177**, dated February 23, 1875; application filed  
February 9, 1874.

*To all whom it may concern:*

Be it known that we, JULIUS FRIEDLAENDER, of Berlin, Prussia, and PETER K. MOELLER, of Leipsic, Saxony, have invented an Improvement in Printing-Surfaces; and we do hereby declare the following to be a full, clear, and exact description of the same.

The process of lithographic printing prior to our invention has been conducted with lithographic stone or zinc, as they presented what were considered the only available surfaces for the purpose, the zinc being restricted in its application to work of the coarser kind.

We have ascertained, however, that a metallic surface of a quality quite equal to that of lithographic stone can be prepared, and it is this surface which forms the subject of this application for a patent. The surface may be prepared in different ways, but it always consists of a metallic deposit on metal plates or cylinders.

It may be remarked that those metallic deposits which impart a polished surface, as most of the solutions of iron, nickel, and arsenic do, are unfit for lithographic purposes, as are also those deposits which do not adhere permanently to the metal.

Deposits of copper, lead, tin, silver, and other metals present dead surfaces admirably adapted to the purpose; but we prefer a deposit of tin, as it can be most readily made.

The metallic deposits can be produced by the ordinary electric process, or they can be produced by a chemical reduction of a salt of the metal, both processes being too well known to need description here.

After the printing plate or cylinder has re-

ceived a very slight deposit, sufficient to cover the surface, which can be determined by the color, it is washed with water and carefully dried, all polishing being avoided, and is then ready for use.

The modes of drawing or transferring on and printing with the surfaces are precisely the same as those adopted with lithographic stones, the surface of the deposited metal having the same peculiar characteristics as those of the stone—characteristics due not to any chemical action of the metal, but to the physical peculiarity of the surface of the deposits.

In order to make corrections in the drawing, the deposit must be removed at the point to be altered, the plate or cylinder carefully cleaned at this point, and the deposit renewed.

The drawing may be fixed by the application of nitric or hydrochloric acids, but in a condition more diluted than that in which they are applied to the stones. Diluted phosphoric acid will serve the same purpose.

We claim as our invention—

A printing plate or roller having the within-described unpolished electro or chemically deposited metallic surface, on which the picture is drawn, or to which it is transferred, as set forth.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

DR. JULIUS FRIEDLAENDER.  
PETER KORFITZ MOELLER.

Witnesses:

HERMANN KREISMANN,  
ROBERT GOTTHEIL.