UNITED STATES PATENT OFFICE.

CHARLES R. BIEDERMANN, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN PROCESSES OF LITHOGRAPHIC TRANSFERS.

Specification forming part of Letters Patent No. **184,132**, dated November 7, 1876; application filed August 9, 1876.

To all whom it may concern:

Be it known that I, CHARLES R. BIEDERMANN, of the city and county of St. Louis and State of Missouri, have invented a new and Improved Process of Autographic Lithographic Printing; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to a certain branch of lithographing; and it consists in a novel process of working autographic transfers upon stone. As heretofore practiced the methods of autographic transfers could not be executed by persons not learned in the trade, and consequently could be of but little use in mercantile and other businesses. This is the case by reason of the fact that the autographic copy has first to be transferred to the stone and then prepared for printing, which requires great skill to prevent the ink from spreading in consequence of the porosity and suction of the stone. When the stone is thus prepared, moreover, much labor is required in cleaning the same off when a different copy is to be desired, which would occur frequently when used for business purposes.

My invention consists, mainly, in dispensing with the treatment of the stone (which would cause it to absorb fluid matter beneath its surface) by hardening the copy on paper into a solid type by the application of nitric acid, and transferring and fixing the hardened copy upon the stone by heating the same to blood heat without chemical treatment of the stone.

In carrying out my invention I take the copy written upon paper and apply nitric acid to the back of the same. As soon as the ink is decomposed the writing commences to shine, and the autograph is ready to be transferred by a pressure produced by drawing it once through the press. A very slight pressure is necessary for this purpose, which is an advantage over the old method, as ordinarily in putting the autograph upon the stone it has to be drawn through repeatedly and with a constantly-increasing pressure, this being necessary to prevent the blurring of the lithographic ink, which is too soft to be absorbed by the stone in one pressing. The impression being transferred to the stone it is fixed thereupon so as to adhere in the shape of a raised type and prevented from being torn off by the inking-roller by heating the stone with burning alcohol to blood heat or a slightly-higher temperature.

The advantages of my invention are that as the absorptive principle of the stone is not made use of except to a very limited extent, common limestone and other stones possessing but little alkali and porosity may be employed for the purpose, and as the ink is hardened upon the surface of the stone in the shape of slightly-raised letters (in contradistinction to permeating the stone) the ink does not sink more than the thousandth part of an inch into the stone, and may be readily cleaned off for a new copy in two minutes, which qualities, it will be seen, render my process particularly valuable for use in the mercantile trades.

I am aware of the fact that it is not new in lithographing to employ dilute nitric acid upon the stone to decompose the lithographing-ink, so as to render the stone capable of taking the printing-ink; but this involves the difficulties referred to in the first part of my specification. I am also aware that it is not new to apply acid to the paper containing the copy, and I do not claim that broadly; but

Having thus described my invention, what I claim as new is—

The herein-described process of printing autographic transfers by decomposing and hardening the ink upon the paper by an application of nitric acid to the back of the same, then transferring the same to the stone by pressure and fixing it by heating the stone to about a blood-heat by means of burning alcohol, as and for the purpose described.

CHARLES ROBERT BIEDERMANN.

Witnesses:

WM. A. CLARK,

ERNEST KOERNER.