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M. H. MUSE

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METHOD OF PRODUCING ELECTROTYPE PLATES

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Fig. 1.

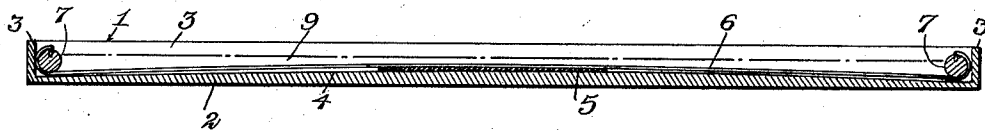


Fig. 2.

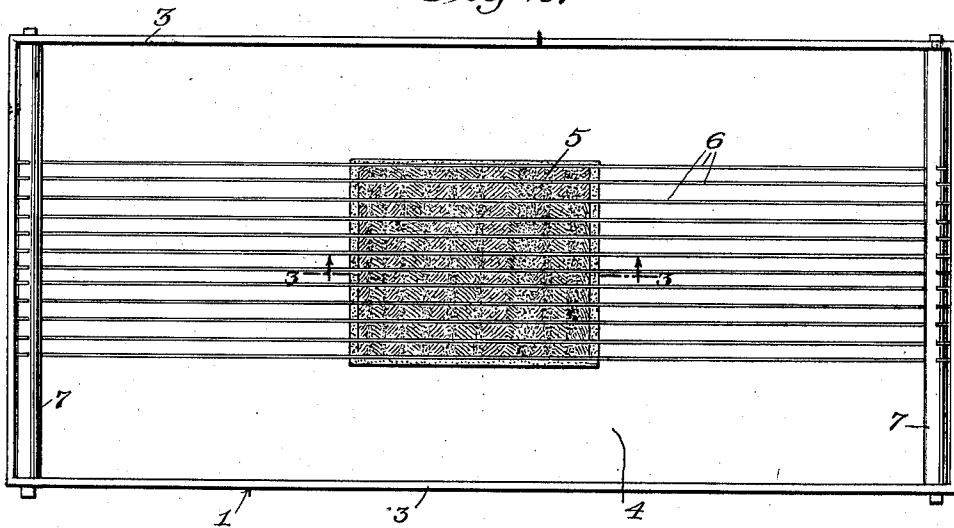


Fig. 3.

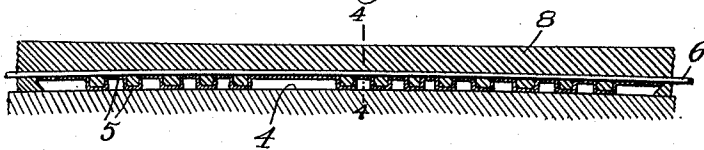
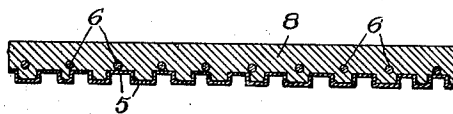


Fig. 4.



WITNESSES

James H. Taylor
Wm. Anderson

INVENTOR

Marshall H. Muse

BY

Mumma, Anderson & Liddy
ATTORNEYS

UNITED STATES PATENT OFFICE

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METHOD OF PRODUCING ELECTROTYPE PLATES

Marshall H. Muse, New York, N. Y.

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4 Claims. (Cl. 22-203)

The present invention relates to a process of producing electrotpe printing plates and it has for its object the production of an electrotpe printing plate in such manner that the application of the backing-up metal thereto will not cause imperfections in the printing face.

In the process as heretofore practiced, the metal shell produced in the usual way by electrically deposited metal, is placed face downward in what is generally known as a backing-up pan comprising a slab having a flat smooth upper surface with shallow walls. Before depositing the shell in the backing-up pan, the back of the shell is tinned, as it is called, by applying thereto a sheet of tinfoil. The pan and shell are then heated sufficiently to melt the tin-foil and cause it to form a thin plating on the back of the shell. After the pan and shell have been heated molten lead or a suitable alloy is then poured into the pan covering the shell to a thickness of approximately one-half inch. It is then allowed to cool. If the shell is not in proper contact with the surface of the slab, the printing surface is apt to be distorted by the pouring of the backing metal on the shell, and the expansion of the metals employed usually causes further distortion of the front or printing face of the shell. It is of course necessary that all the printing face of the plate shall make contact with the slab in order that there shall be no depressions or other defects in the printing face.

As the electrotpe printing plates produced by the old process have many imperfections in the printing face, it is necessary that such defective parts be brought to a uniform level, and this is done by smoking or sooting the printing surface of the plate, then rubbing with a flat smooth printer's rubber which polishes or burnishes all high points leaving the low spots or thin places with the soot on the surface thereof. This indicates to the finisher where the imperfections in the printing surface are located. The plate is then turned face down on a smooth surfaced slab and the back is pounded with a hammer or other tool at the defective spots until the printing surface of the plate is smooth, level and uniform. The backing is then shaved off producing a printing plate of a uniform thickness.

It is the object of my present process to eliminate this costly finishing process and to produce an electrotpe printing plate which shall, after the metal backing has been applied to the shell, be of uniform thickness with all parts of its printing surface in the same plane, free from all defects due to the warping of the shell while apply-

ing the backing thereto or to the expansion and contraction of the metals employed in the shell and backing.

To the above end my process consists of the steps and series of steps which will now be described.

The process is shown diagrammatically in the accompanying drawing, in which—

Fig. 1 shows a longitudinal sectional view of a backing-up pan illustrating the holding of the shell in contact with its support and the application of pressure thereto while the backing is being applied;

Fig. 2 shows a plan view illustrating the manner of producing uniform pressure contact of the shell with the surface of the support while the backing is being applied;

Fig. 3 represents a longitudinal sectional view taken on the line 3—3 in Fig. 2 and showing a section of a plate comprising a shell and its backing after the molten metal has been applied thereto;

Fig. 4 is a section through the plate after it has been straightened and the backing shaved off.

In carrying out my process I employ a backing-up pan 1 having a bottom 2 and an upstanding flange 3. The under surface of the bottom 2 is flat, level and straight. The upper surface is slightly curved longitudinally as indicated at 4. The shell 5 is laid upon the curved surface 4 as indicated in Fig. 2, with its printing face in contact with the curved surface 4 of the backing-up pan. Sufficient pressure is applied to the back of the shell 5 in order to insure that the printing surface thereof will at all points have contact with the curved surface of the pan and this pressure may be produced as shown in the drawing by a series of parallel wires 6 of copper or other suitable metal, sufficient in number and spaced so as to cover the back of the shell from one side edge to the opposite side edge to insure perfect contact. These wires 6 are drawn tightly from end to end across the back of the shell 5 longitudinally, and any suitable means may be provided for applying tension or pull on the wires and to hold them in a taut condition while the backing metal is being poured into the pan.

As shown in the drawing, the wires 6 are connected to bars or rollers 7, which may be turned in any suitable manner, the draft on the wires 6 being applied in a plane at each end below the curved surface 4 on which the shell 5 rests, as clearly indicated in Fig. 1. This results in the wires exerting uniform pressure on the shell from side to side and from end to end thereof, as

clearly indicated in Figs. 1 and 2. Having secured uniform close contact of the printing surface of the shell with the curved upper surface of the bottom of the backing-up pan, the usual molten backing metal is poured in over the back of the shell and over the taut wires, sufficient molten metal being poured to form a backing 8 of the required thickness or to a depth approximating that indicated by the broken line 9 in Fig. 1. After the backing metal has cooled the plate is removed and its edges trimmed, leaving portions of the wires 6 embedded therein, as indicated in Figs. 3 and 4.

By applying the backing to the shell in the manner indicated, imperfections in the printing face due to the distortion of the shell or the contraction and expansion of the metals employed will be wholly or partially prevented, producing a plate which will not require the costly finishing work now necessary to bring the face of the plate into a uniform plane.

After the resultant plate has been trimmed, the final step of the process consists in straightening the curved plate to place all parts in a straight horizontal plane, and thereafter the backing is shaved off if necessary to produce a printing plate of the required thickness.

While I have shown and described in connection with the description of my improved process a specific form of apparatus, it is to be understood that my process is in no way limited to the employment of any particular apparatus.

I claim:

1. The method of producing electrolytic printing plates which consists in supporting the shell with its printing face in contact with a smooth convex surface, applying pressure to the back of the shell to conform its printing face to the convex surface, pouring the molten backing metal thereon while the pressure is maintained, and thereafter straightening the plate.

2. The method of producing electrolytic printing plates which consists in supporting the shell with its printing face in contact with a smooth convex surface, applying pressure to the back of the shell to conform its printing face to the convex surface, pouring the molten backing metal thereon while the pressure is maintained, permitting the backing metal to cool and set, and thereafter trimming off the marginal edges of the shell and backing metal and straightening the plate.

3. The method of producing electrolytic printing plates which consists in supporting the shell with its printing face in contact with a smooth convex surface, applying pressure to the back of the shell to conform its printing face to the convex surface, pouring the molten backing metal thereon while the pressure is maintained, permitting the backing metal to cool and set, trimming off the marginal edges of the shell and backing metal, and thereafter straightening the plate.

4. The method of producing electrolytic printing plates which consists in supporting the shell with its printing face in contact with a smooth convex surface, superimposing a group of parallel metal wires upon and in contact with the back of the shell, forcing said wires against the shell to apply pressure thereto to conform the shell to the convex surface thus effecting a close contact between the printing face of the shell and the convex surface at all points of contact, pouring the molten backing metal on the shell and wires while the pressure on the shell is maintained thus embedding the wires in the backing, permitting the backing metal to cool and set, trimming off the marginal edges of the backing and shell and the ends of the projecting wires, and thereafter straightening the plate.

MARSHALL H. MUSE. 40