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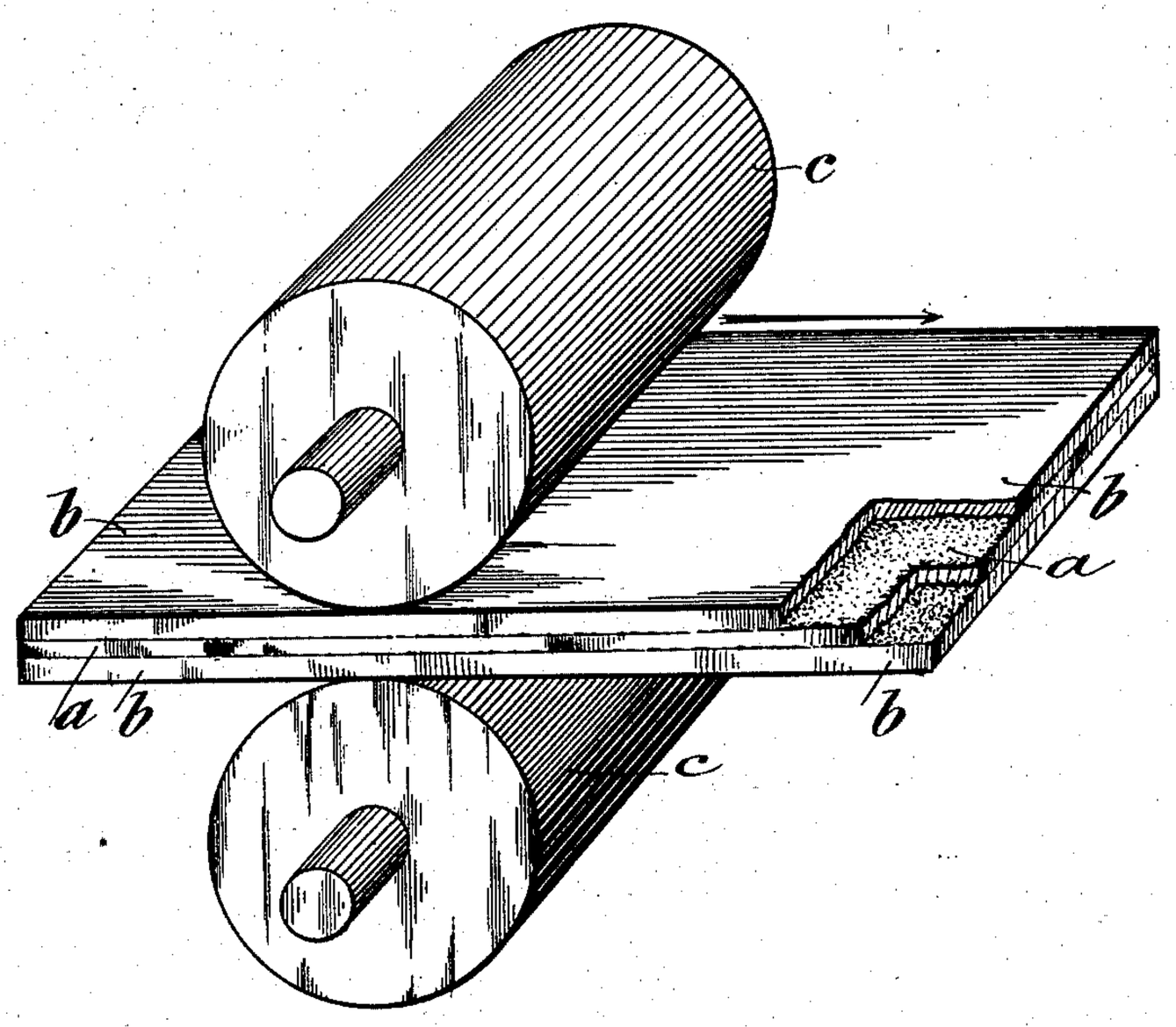
J. DEJEY.

PROCESS OF HARDENING METALS.

(Application filed Apr. 4, 1902.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

JOHANNY DEJEY, OF LYONS, FRANCE.

PROCESS OF HARDENING METALS.

SPECIFICATION forming part of Letters Patent No. 712,365, dated October 28, 1902.

Application filed April 4, 1902. Serial No. 101,388. (No specimens.)

To all whom it may concern:

Be it known that I, JOHANNY DEJEY, a citizen of the Republic of France, residing in Lyons, France, have invented certain new and useful Improvements in Processes of Hardening Metals, of which the following is a specification.

In certain industries sheet metal is required having a greater density and degree of hardness than is obtainable in the ordinary process of rolling the metal into sheets. Recourse has heretofore been had to hammering for the purpose of hardening the sheets. A special instance where a particularly hard metal is required is in the case of zinc plates employed for the manufacture of printing plates and blocks. These plates at present have to undergo considerable hammering and other manipulation, whereby their cost is considerably increased.

The object of this invention is to provide a process by which metals, and in particular zinc, may be hardened to an extent practically the same as was heretofore obtained by the above-mentioned hammering of the previously-rolled soft-metal sheets; and for this purpose the invention consists of the process herein described of hardening sheet metal which comprises the steps of placing the sheet to be hardened between two unpolished plates of a different metal having a temperature of malleability greater than that of the sheet to be hardened and then subjecting said sheet and plates to a slow progressive compression action over the surface of the same.

The accompanying drawing illustrates a sheet of metal arranged between two plates, the interior surface of each plate adjacent the intermediate sheet of metal being unpolished and the sheet with the two plates inserted between the rolls in position for rolling.

In carrying out my invention, for example, with sheets of zinc intended for use in the manufacture of printing-plates, a sheet *a* of zinc soft-rolled as it comes from the ordinary mill-rolls and of approximately the length and breadth desired in the finished sheet is taken and is placed between two iron or steel plates *b b* of approximately the same size. These iron or steel plates are not polished, but are unpolished or may, in fact, be slightly roughened on their faces placed in contact with the sheet of zinc to be hardened. The sheet and plates are then together entered between the rolls *c c* and slowly rolled. It is essential that the rolling take place slowly, so that a slow progressive compression action is exerted upon the sheet and plates, gradually passing from one end of the same to the other. By this operation the molecules of the zinc sheet are compacted together. The length and breadth of the sheet of zinc are not materially altered; but the metal is by reason of the compression action rendered harder and of a finer grain, susceptible of a higher polish and finish, and better adapted for the purposes for which it is designed. The plate is rendered of uniform density and texture throughout instead of, as by the ordinary rolling, being slightly harder at each surface than at the center. This homogeneousness of the sheet permits the use of the same a second time in the art of printing by simply planing off the first engraving placed upon the plate.

When it is desired to make a cylinder of metal having a cylindrical outer surface and a conical hole, such cylinders being employed in connection with certain types of printing-presses, a sheet hardened in the manner described is placed in a suitable bending apparatus and bent into cylindrical form and the meeting edges secured together by welding the same. The cylinder thus obtained is then placed upon a mandrel having the desired taper and the same introduced between suitable rolls and rolled thereby until the metal has the desired shape.

It is obvious that in place of iron or steel plates plates of any other metal having a temperature of malleability greater than that of the sheet metal to be hardened may be employed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The process herein described of hardening sheet metal, which consists in interposing the

sheet to be hardened between two unpolished plates of a different metal having a temperature of malleability greater than that of the sheet to be hardened, and then subjecting said sheet and plates to a slow progressive compression action, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHANNY DEJEY.

Witnesses:
AIMÉ LANÇON,
MARIN VACHON.