

No. 753,144.

PATENTED FEB. 23, 1904.

I. KITSEE.  
METHOD OF PRINTING ON TINS.  
APPLICATION FILED SEPT. 18, 1899.

NO MODEL.

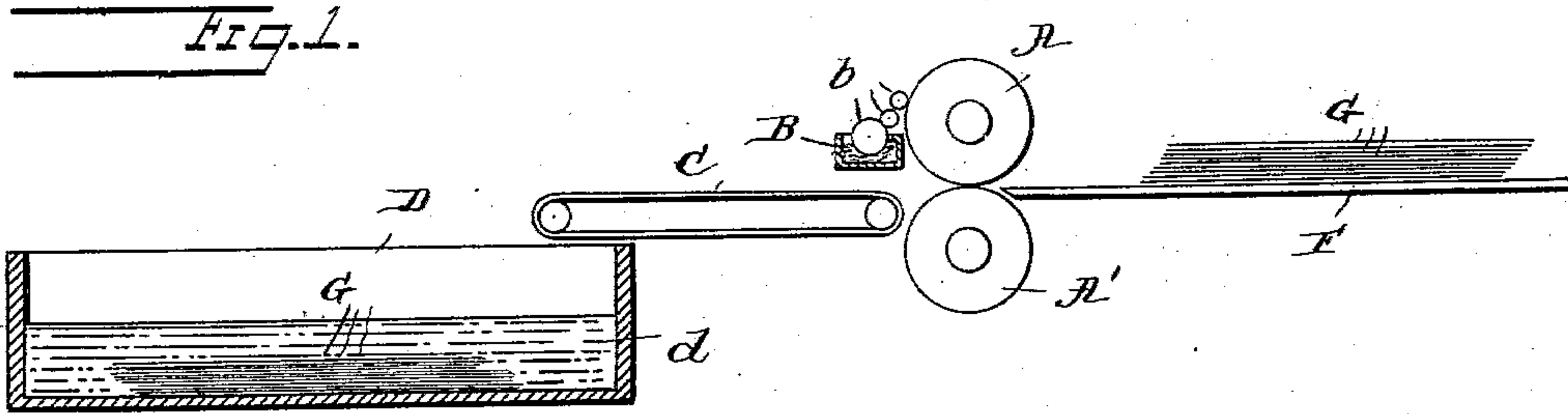


Fig. 2.

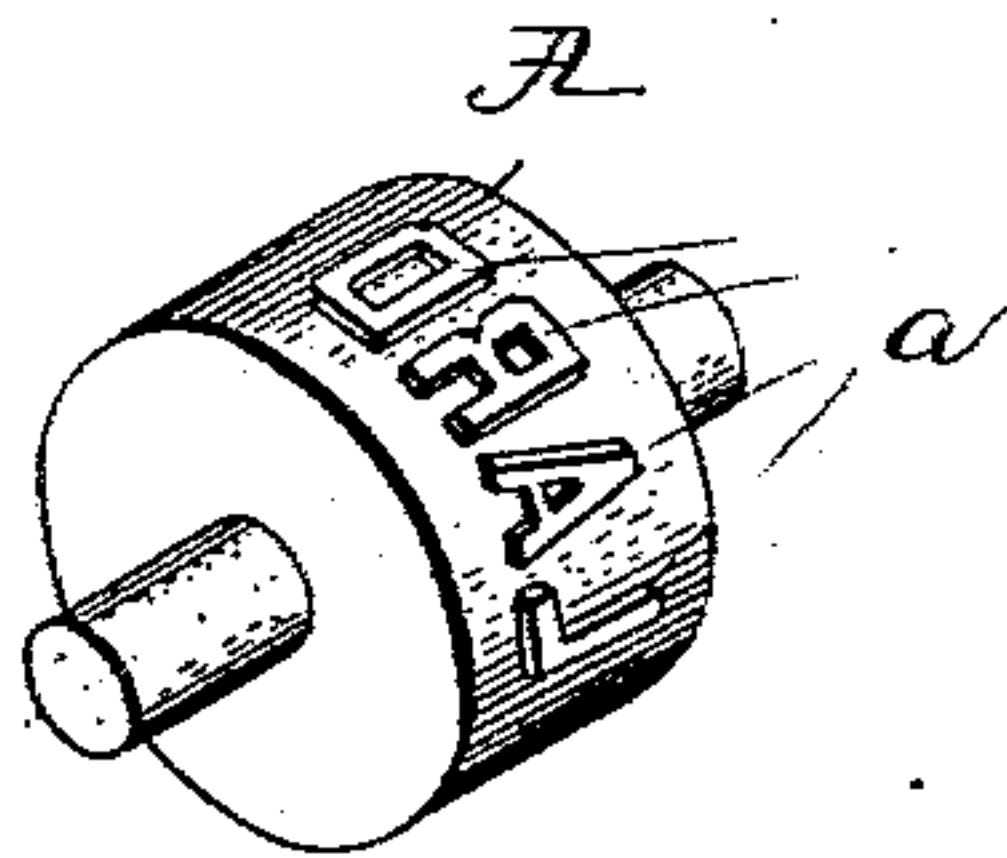
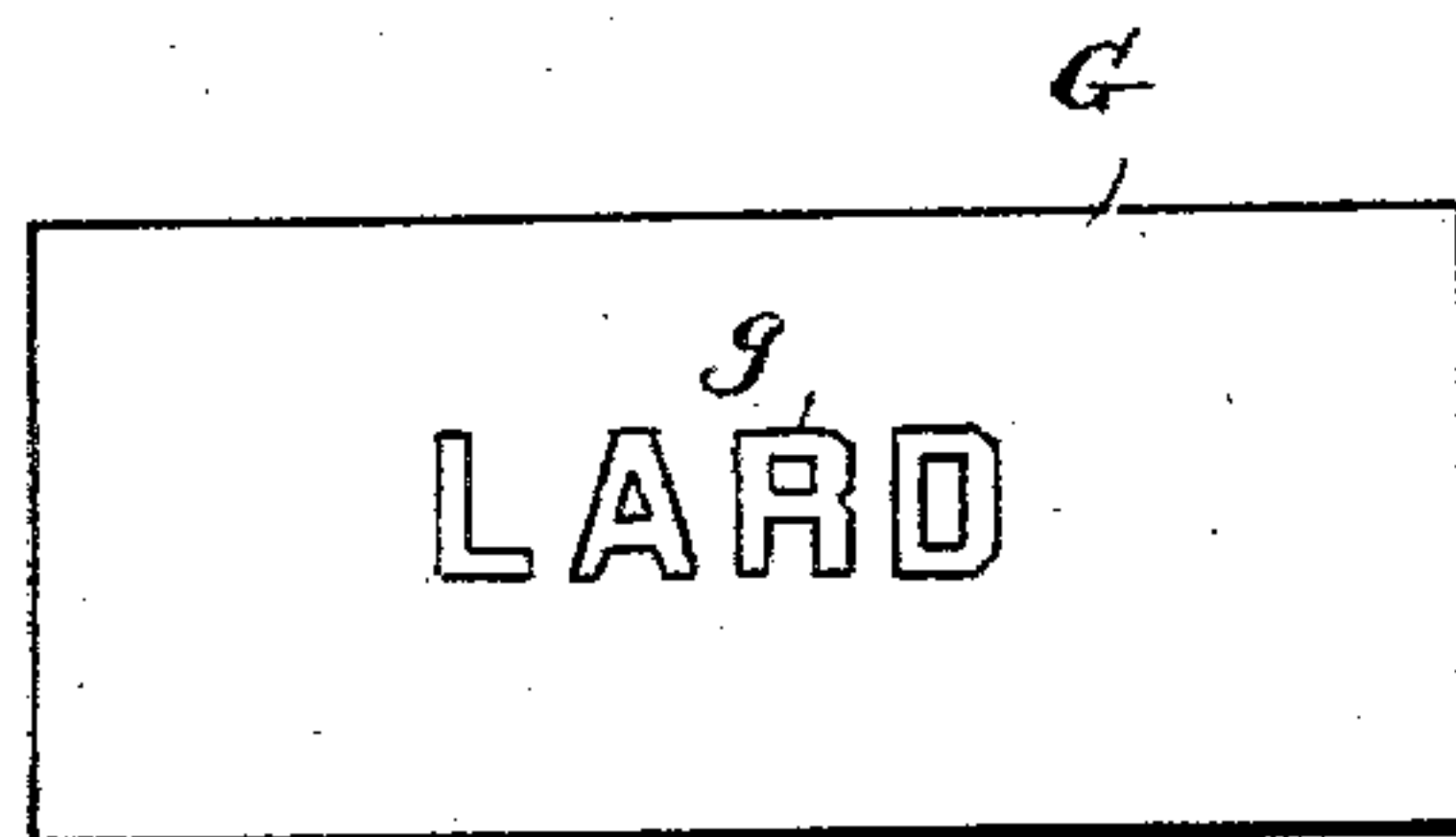


Fig. 3.



Witnesses.

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# UNITED STATES PATENT OFFICE.

ISIDOR KITSEE, OF PHILADELPHIA, PENNSYLVANIA.

## METHOD OF PRINTING ON TINS.

SPECIFICATION forming part of Letters Patent No. 753,144, dated February 23, 1904.

Application filed September 18, 1899. Serial No. 730 877. (No specimens.)

*To all whom it may concern:*

Be it known that I, ISIDOR KITSEE, of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Methods of Printing on Tins, of which the following is a specification.

My invention relates to an improvement in the method of printing on tins.

The object of my invention is to produce on tin or tin cans an inscription or design which will not be destroyed by handling or by the contents of the can itself.

In commerce the iron sheets tinned on the surface are generally designated by the word "tins," and out of these iron sheets are manufactured tin cans for canning food or storing lard.

This my invention is applicable to all kinds of tin, but has more special reference to the printing of tins designed to be made into cans for lard or other purposes.

The printing of tin cans for lard is accomplished to-day with the aid of the lithographic process, and the great disadvantage arises that in time the design or printing matter becomes mutilated through the oozing out of the greasy contents and such cans have to be returned as unsalable. To obviate this difficulty is one of the objects of my invention.

Referring to the drawings, Figure 1 is a diagram illustrating the general operation of the printing process. Fig. 2 is a perspective view of the printing-roller. Fig. 3 is a plan view of the tin plate after it is finished.

A A' are rollers.

B is the tank containing the chemical necessary for the printing. *b b* are its feed-rollers.

C is the conveyer, and D the water-tank; *d*, the water contained therein.

F is the support or table for the tin plates G. *a a* are the raised letters on the roller A, and *g* is the matter printed upon the plate G.

A series of sheets designed to be made into cans are placed on the operating-table and one after the other fed between the rollers A A'. The tank B contains a copper solution, preferably a concentrated solution of sulfate of copper intermixed with about two per cent. of chlorid of copper thickened with an addi-

tion of gum-arabic. The lower feed-roller *b* is partially immersed in the solution, and as this roller is always revolving and is in contact with the two rollers *b* it is obvious that part of the solution will be transmitted to each of these rollers, and as the roller A with the raised surface is in contact with the uppermost of the rollers *b* part of the solution will be carried to the raised surfaces of the printing-roller, and these raised portions will be provided with a solution capable of leaving an imprint on any surface they may come in contact with. If a solution containing a copper salt is brought in contact with the surface of one of these tins, a chemical change takes place by elective affinity, whereby part of the thin and underlying iron is converted into a salt—sulfate or chlorid, as the case may be—and the metallic copper is deposited on the surface.

The surface of the roller A is provided, as said above, with the letters or designs to be printed on the surface of the tins in relief; but as the ink consists of an acid solution, for the reason that a solution not containing an acid—such, for instance, as a solution containing only a carbonate of copper or an ammoniate of copper or a simple oxid of copper—is not well adapted for the purpose, as stated. The raised letters or designs should consist of soft vulcanized rubber. A simple way of providing the roller with this surface consists in producing a matrix in the same manner as rubber stamps of to-day are produced and then cementing this matrix with the raised letters or designs on the outer surface onto the periphery of the roller.

The *modus operandi* of my invention is as follows: One of the tins G is carried through the slowly-revolving rollers A A' and will in the process of passing through these rollers come in contact with the raised portions or designs with which the printing-roller A is provided, and as these raised portions are moist with the copper solution it follows that the metallic copper will be deposited on just such portions of the surface as are brought in contact with the raised portion of the roller, thereby providing the tin with a facsimile of the letters or designs in metallic copper. Tins



are, as is well known, of a whitish metal, and as the color of copper is red, the contrast is sufficient for all practical purposes; but where the black printing is desired the copper surface may be brought in contact either with sulfurous-acid gas or sublimed sulfur moist with diluted sulfuric acid. The plate is then carried with the aid of the revolving endless band C to the tank D and there immersed into the water contained in said tank. The carrier C is interposed between the printing mechanism and the tank, for the reason that the copper solution shall have sufficient time to act upon the surface of the tin. The tank D may also contain an alkali for the purpose of neutralizing the acid remaining on the tin.

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

1. The method of producing designs or inscriptions on tins or tin cans which consists in printing on said tins or tin cans with an ink

containing a solution of an acidulous compound of copper, thickened with a dissolved gum.

2. The method of printing on tins which consists in first printing on said tins with the aid of an ink containing a dissolved metal and then subjecting the inked-in parts to the action of a compound containing sulfur.

3. The method of printing on one metal with an ink containing in solution a second metal which consists in first providing an ink containing said metal in solution, then printing with said ink on said metal, and then subjecting the printed-in parts of said metal to the action of a sulfur.

In testimony whereof I sign my name, in the presence of two subscribing witnesses, this 16th day of September, A. D. 1899.

ISIDOR KITSEE.

Witnesses:

E. R. STILLEY,  
WM. M. DEUTSCH.