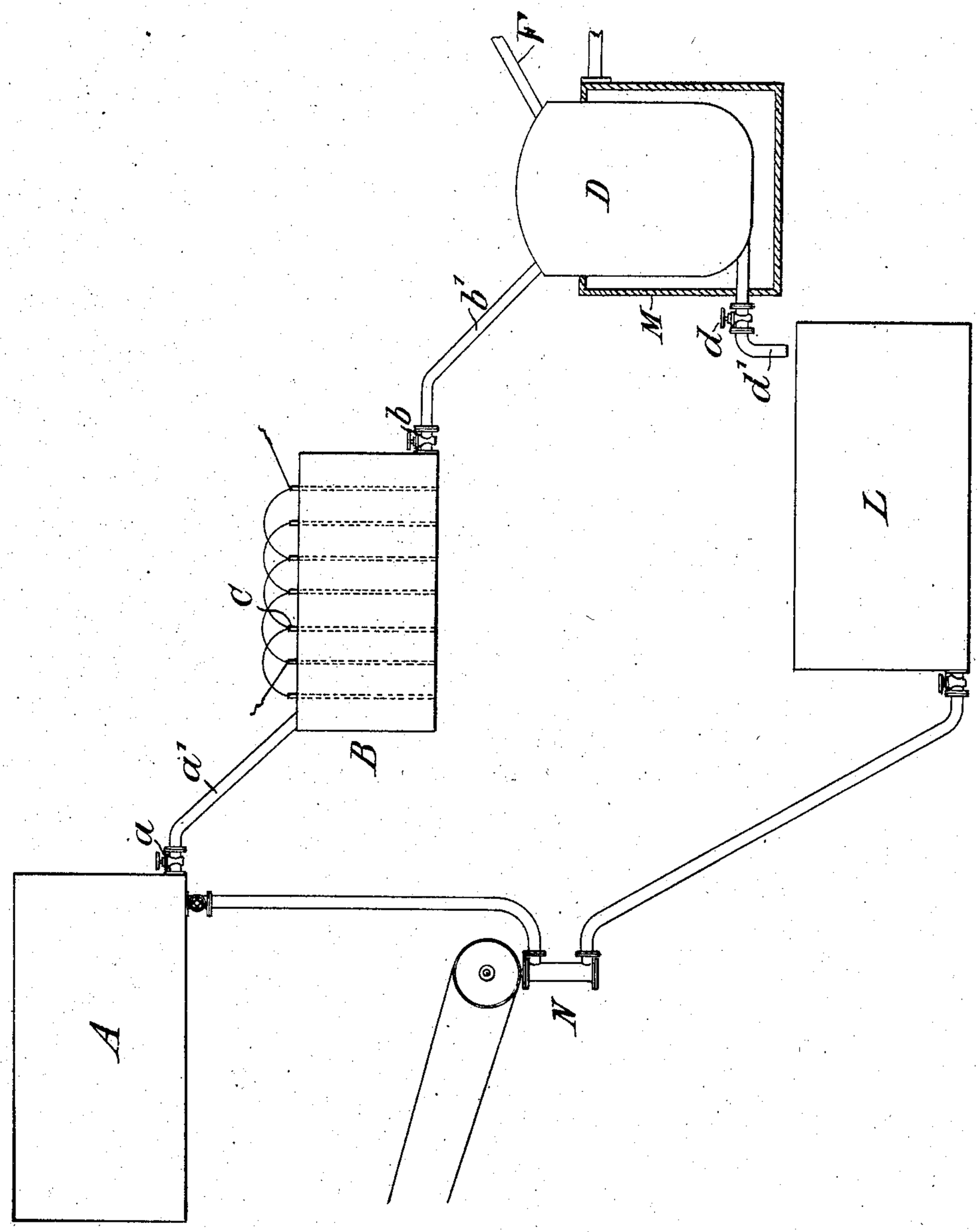
No. 791,555. PATENTED JUNE 6, 1905.

H. W. HEMINGWAY.

PROCESS OF STRIPPING TIN.

APPLICATION FILED OCT. 29, 1902.




WITNESSES:

H. E. Dixon

Norman S. Jones.

INVENTOR:

H. W. Hemingway,

per G. H. Hardingham.

Attorney.

PHOTO-LITHOGRAPHED BY SACKETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 791,555. Patented June 6, 1905.

# UNITED STATES PATENT OFFICE.

HENRY WILLIAM HEMINGWAY, OF WALTHAMSTOW, ENGLAND.

## PROCESS OF STRIPPING TIN.

SPECIFICATION forming part of Letters Patent No. 791,555, dated June 6, 1905.

Application filed October 29, 1902. Serial No. 129,315.

*To all whom it may concern:*

Be it known that I, HENRY WILLIAM HEMINGWAY, a subject of the King of Great Britain and Ireland, residing at "Albyns," Forest Road, Walthamstow, Essex, England, have invented a certain new and useful Improved Process of Stripping Tin from Tinned Iron, Recovering the Respective Metals, and Obtaining Nitric Acid as a By-Product, of which the following is a specification.

In the specification to my Letters Patent dated December 4, 1900, No. 663,024, is described a process in which tinned iron is treated with a solution of persulfate of iron, the tin being precipitated as a sulfid, whence the metal is recovered.

According to my improved process, the subject of my present invention, I still employ a solution of persulfate of iron as an agent for stripping the tin; but I make the solution slightly acid and treat it electrolytically, the tin being deposited in a metallic state upon any suitable cathode. When the electrolyte becomes inactive, I treat it with nitrate of soda (or of potash) in conjunction with sulfuric or hydrochloric acid with a view to its revivification.

The accompanying drawing represents apparatus adapted for use in carrying out my improved process.

The tinned iron clippings or like scrap are immersed in a bath of persulfate of iron contained in the tank A, said bath being suitably acidified by the addition of any mineral acid; but sulfuric acid is preferred. The tin having become dissolved, a valve *a* in the pipe *a'* is opened and the liquor run into the vessel B, where it is treated electrolytically, the electrodes C consisting, preferably, of an iron anode and a copper or tinned copper cathode. The tin or the greater portion thereof having been deposited upon the cathode, the electrolyte is passed by way of the pipe *b'*, controlled by the valve *b*, to the vessel D, where nitrate of soda, (or of potash,) either alone or in conjunction with sulfuric acid, is added. The efficacy of the liquor is hereby restored and the liquor rendered suitable for reuse in stripping a further quantity of tinned iron. For the mixture of nitrate and sulfuric acid other oxidizing agents may be substituted. The vessel D is provided with a jacket M for heating the liquor and with an outlet F for carrying off the nitrous fumes. The electrolyte having been sufficiently oxidized, the valve *d* in the pipe *d'* is opened and the liquor allowed to run into the tank L, whence it is returned by the pump N or by equivalent means to the tank A.

When it is deemed desirable to reduce to a minimum the quantity of persulfate of iron employed, the tin-scrap may be added direct to a solution of nitrate of soda (or of potash) mixed with sulfuric acid, the tin going into solution for ultimate recovery by electrolytic or other means.

What I claim as my invention, and desire to secure by Letters Patent, is—

The herein-described process for stripping tin from tinned iron, recovering the tin and revivifying the exhausted stripping liquor, consisting in immersing the tinned iron in a bath composed of a solution of persulfate of iron slightly acidified, treating the same electrolytically for the purpose of depositing the tin in a metallic state upon any suitable cathode, and revivifying the bath by adding nitrate of soda, substantially as set forth.

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

HENRY WILLIAM HEMINGWAY.

Witnesses:
WM. O. BROWN,
FRED C. SMITH.