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O. S. FELLOWS & A. E. HOPKINS.

METHOD OF REMOVING SUPERFLUOUS METALLIC COATING FROM SHEET METAL.

APPLICATION FILED OCT. 1, 1904.

Fig. 1.

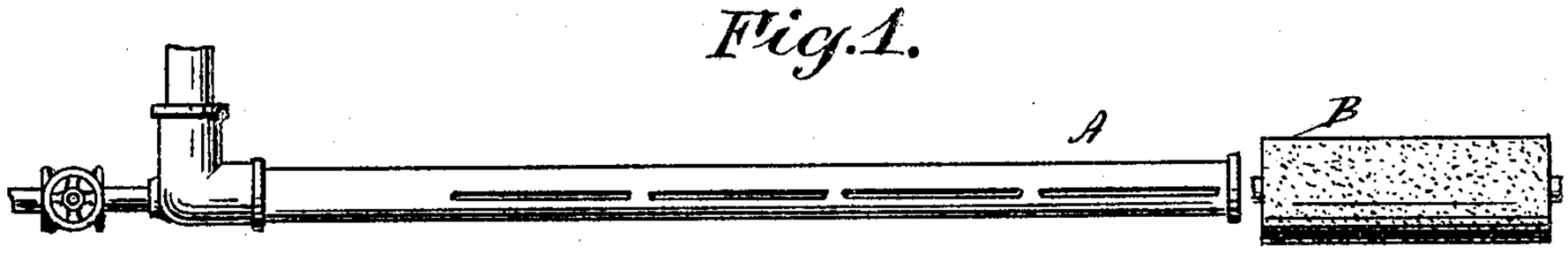


Fig. 2.

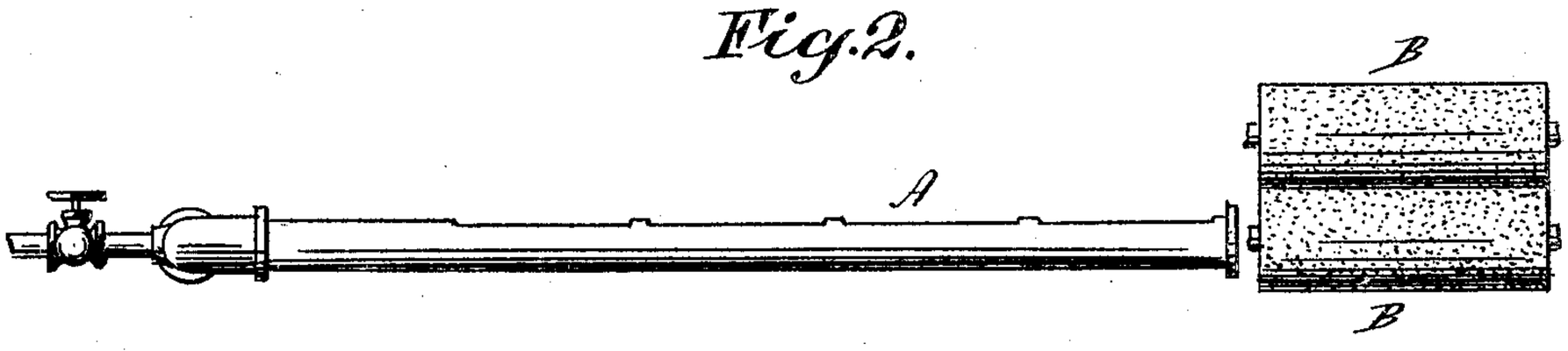


Fig. 3.

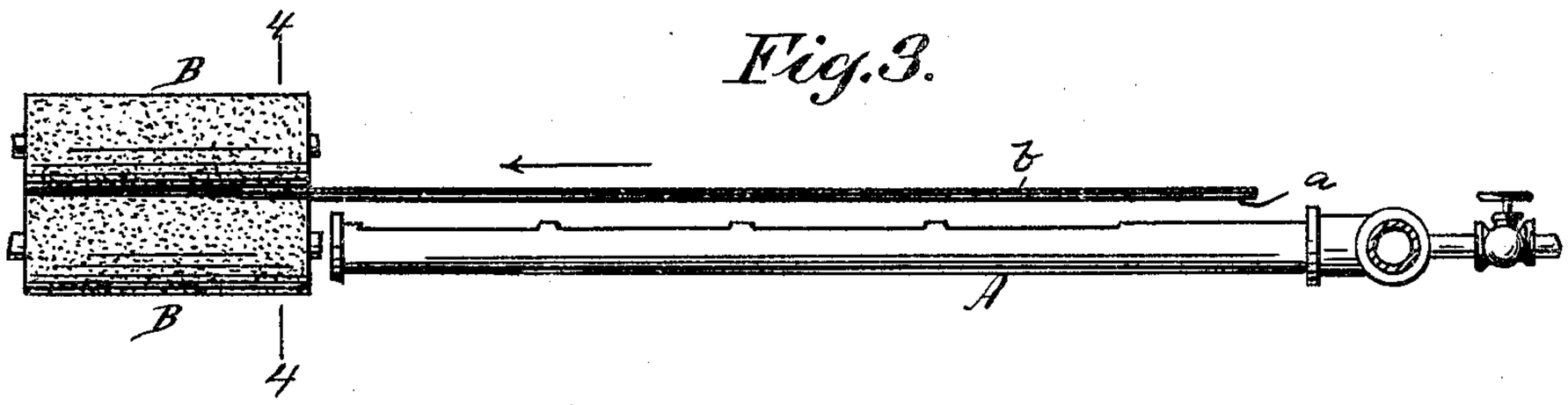
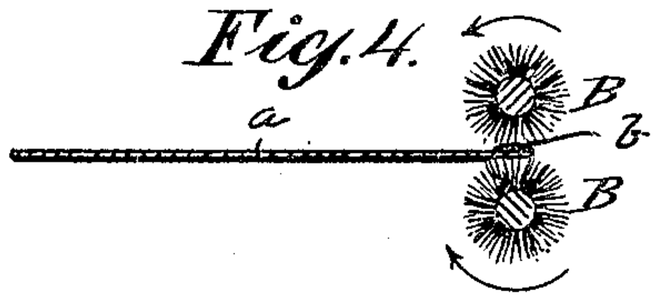


Fig. 4.



Witnesses:
D. W. Gardner
S. N. Neve

Inventors:
Olni S. Fellows
Archibald E. Hopkins
By their attorney
Geo. W. Mabb

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UNITED STATES PATENT OFFICE.

OLIN S. FELLOWS AND ARCHIBALD E. HOPKINS, OF MIDDLETOWN, NEW YORK.

METHOD OF REMOVING SUPERFLUOUS METALLIC COATING FROM SHEET METAL.

SPECIFICATION forming part of Letters Patent No. 794,169, dated July 11, 1905.

Application filed October 1, 1904. Serial No. 226,793.

To all whom it may concern:

Be it known that we, OLIN S. FELLOWS and ARCHIBALD E. HOPKINS, citizens of the United States, residing at Middletown, Orange county, and State of New York, have invented certain new and useful Improvements in the Method of Removing Superfluous Metallic Coating from Sheet Metal, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

Our present invention, like that set forth in our concurrent application, Serial No. 226,441, filed September 29, 1904, relates to a method of removing superfluous metallic coating from sheet metal, particularly what is known as "list," from the selvage edge of metallic plates coated with tin, lead, zinc, or other metal or alloy, the list being occasioned by the collection of an excess of the metallic coating upon the lower edge of the sheet of metal as drawn from the rolls or bath, resulting ordinarily heretofore in a waste both of the metallic coating and of the sheet metal, since the selvage edge of the plate with the list on it is not available for use, for reasons well known in the arts in which coated sheet metal is employed.

The object of our invention is to save the list or excess of metallic coating and at the same time to render all parts of the coated sheet, including the selvage edge, available for practical use, the plate being thus perfected and rendered more valuable commercially and otherwise; and our invention consists in the method hereinafter set forth of displacing all excess of metallic coating from sheet metal, the essential and distinguishing feature being the remelting or liquefying *in situ* of the set or hardened list or superfluous metallic coating after the same has become positively set or hardened upon the surface of the metal sheet and its removal from the sheet metal by positive means, such as a brush or equivalent mechanical expedient, in contradistinction to the use of a fluid-blast, as set forth in our concurrent application hereinbefore referred to.

In the accompanying drawings, Figure 1 is a plan of parts essential in treating coated sheet-metal plates according to our invention. Fig. 2 is a side elevation of the same. Fig. 3 is an elevation taken upon the side opposite to that shown in Fig. 2 and illustrating diagrammatically the position of the selvage edge of a coated sheet-metal plate under treatment. Fig. 4 is a transverse section upon plane of line 4 4, Fig. 3.

In describing the practical application of our improved method of displacing superfluous coating or list from sheet metal we herein refer to the treatment of tinned sheet-iron only by way of illustration, it being understood that we do not limit ourselves in this respect and that sheet-metal plates and metallic coatings of all kinds are included within the scope of our invention.

In the drawings, *a* designates the metal sheet, *b* the list or excess metallic coating thereon, and A represents an elongated gas-burner or equivalent means of heating the selvage edge or other portion of a tin-coated plate, and B one or more brushes, wipers, or other mechanical expedients arranged to positively remove the liquefied excess of tin or list from the heated portion of the plate, the direction of motion of the brush or equivalent with relation to the plate being such as to drive the liquefied list or excess of metallic coating from the edge thereof, as will be understood by reference more particularly to Fig. 4. The excess of tin or other metallic coating thus removed from the plate may be collected and utilized in any suitable manner. The plate in its presentation to the reheating device and to the list-removing means may be supported in any suitable manner. (Not shown.)

We are aware that various expedients have been proposed for the prevention of an excess of coating on metal plates during manufacture; but we are not aware that list or excess of metallic coating after it has set or hardened on sheet metal has ever been remelted and displaced therefrom by positive means, as herein described and claimed.

We herein expressly disclaim any method of preventing the formation of an excess of metallic coating upon sheet or other form of metal during the operation of coating the same or before the coating has positively set

or hardened upon the surface of the metal. We have found that it is not practicable to remove the excess of metallic coating from the sheet metal during the coating process after the sheet metal leaves the finishing-rolls and before the list has had time to positively set or harden, for the reason that in such case the excess of coating would fall upon the finishing-rolls and into the oil above the metallic bath, contaminating both and causing the defacement of succeeding plates. Furthermore, the snapping of the rolls as the sheet leaves them is what causes the list. It is therefore to be understood that our invention relates to a supplementary or finishing process distinct from the operation of applying the metallic coating to the metal. We do not seek to prevent the formation of list or excess of metallic coating upon the plate, but we do effect the removal or elimination of such list or excess subsequent to the formation thereof and after the same has positively set or hardened upon the surface of the sheet metal.

In our companion application, Serial No. 226,441, filed September 29, 1904, we describe and claim generically the process above outlined, and hence make no claim thereto, broadly, in this application, the present invention being restricted to means which positively contact with the remelted list to remove the same.

By the use of our method of remelting or liquefying the list or excess of metallic coating after the preliminary steps in the manufacture of the plate we attain certain practical advantages. The manipulation of the sheet metal to thus finish it after it has been coated and cooled may be accomplished with ease and convenience in a simple manner and by simple means, and a perfectly uniform plate of increased commercial value may thus be produced in which the so-called "selvage edge" may be said to be eliminated, since it is rendered available for use like the rest of the plate. It is obvious that in accomplishing this result various modifications and mechanical expedients may be resorted to in effecting the liquation and displacement of the list or excess of metallic coating from the sheet metal without departing from the spirit and intent of our invention, and we do not, therefore, limit ourselves to the construction and arrangement of parts shown; but

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The method of removing superfluous metallic coating from sheet metal after the coating has been applied and positively set or hardened upon the surface of the sheet metal, which consists in remelting the set or hardened excess of metallic coating *in situ*, and then positively removing the remelted excess of coating by means in direct positive contact therewith.

2. The method of removing superfluous metallic coating from sheet metal after the same has been coated and the coating positively set or hardened upon the surface of the sheet metal, which consists in remelting the set or hardened excess of metallic coating *in situ*, and then positively removing the remelted excess of coating by brushing.

OLIN S. FELLOWS.
ARCHIBALD E. HOPKINS.

Witnesses:
D. W. GARDNER,
GEO. WM. MIATT.