UNITED STATES PATENT OFFICE.

WARREN B. HOWE, OF CHICAGO, ILLINOIS.

METHOD OF APPLYING PARAFFINE AND SIMILAR SUBSTANCES TO PAPER AND STRAW-BOARD.

SPECIFICATION forming part of Letters Patent No. 329,743, dated November 3, 1885.

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To all whom it may concern:

Be it known that I, WARREN B. HOWE, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in the Method of Applying Paraffine and Similar Substances to Paper and Straw-Board, of which the following is a specification, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in methods of applying paraffine and similar substances to articles made of paper or straw-board—such, for instance, as paper cartons or boxes used for packing sensitive articles, as tea, coffee, or spices, and separating frames or mats used for packing photographers' "dry-plates," the sensitive film upon which is liable to injury by moisture or chemical substances which may be contained in the paper or board.

The object of the invention is to provide such a method of applying paraffine or other similar substance to such paper or straw-board articles, whereby the quantity of paraffine so applied may be readily and certainly limited to an amount only sufficient for the purpose.

The advantages of the invention are a material saving in the quantity of paraffine or its equivalent used, and avoidance of various undesirable results which follow the original application of an excessive quantity thereof, as will more fully appear.

The process constituting my invention consists, essentially, in dipping the article to be treated in a bath of melted paraffine or other substance similar in its characteristics when the article is at a temperature lower than the melting-point of the paraffine and promptly removing it from the bath, whereby the adhering paraffine is prevented from entering the body of the article to any considerable extent, and practically forms by congealment only a thin coating or film upon its surface, and then subjecting said article to heat above the melting-point of the paraffine until the former has been brought to substantially the same temperature throughout, and the superficial paraffine is thereby caused to sink into the paper or board.

It has been proposed heretofore to treat articles of paper or straw-board with paraffine or similar substances by a process in which the article is first heated to a temperature higher than the melting-point of paraffine, and then immersed in such heated state in the bath of melted material. In this older process the article, being when dipped in the bath in condition to readily absorb the melted material, will become fully or substantially saturated, and will also, in addition to the substance absorbed, be covered by a distinctly visible coating of surplus material, forming a considerable external body thereon. The subsequent heating of the article for the purpose of removing this surplus material has been found to leave the article with a greasy surface, and not one of a dry smooth texture and even color, such as may be obtained by the process herein described and claimed as new. I have found by experiment that the quantity of paraffine deposited in the form of a coating upon the article by dipping it when at a temperature lower than the melting-point of the paraffine will be less than will serve to completely saturate paper or board of the usual thickness used in making boxes or other articles used for packing merchandise, so that when the article is afterward heated for causing the absorption of the said coating a less quantity is present than will fully saturate the paper, and when absorbed will leave the article with a smooth dry surface, and one which is not objectionably greasy to the touch or harmful to the contents of the package by reason of an excess of paraffine. The article will be quickly removed from the bath, because if allowed to remain a sufficient time therein to become heated through, the paraffine will soak into and fill the paper or board, with the same objectionable result which follows from previously heating the article—to wit, of applying an excess of paraffine. That portion of the bath substance which strikes and to a slight extent enters the paper in this brief dipping of the article is congealed by the lower temperature of the paper with which it comes in contact, and, the article being promptly removed from the bath, instead of being itself heated by the liquid, it cools the latter, and

insures, as stated, that an adhering coat shall be practically confined to the external surface of the article.

The appliances employed in my process may obviously be of the ordinary construction, any form of oven or hot-air chamber being all that is required for the heating which follows the dipping. It is to be understood, of course, that the paraffine coating may either be allowed to cool and become solidified after dipping and before the heating of the article, or that the article after being dipped may be immediately heated to cause the absorption of the coating, the final result being the same in either case.

My improved process above described may be carried out when the articles at the time of being dipped are at any temperature lower than the melting-point of paraffine; but favorable results are obtained when the articles are at the usual temperature of a room in which workmen are employed.

One important advantage of my invention is that the article when coated with paraffine in quantity less than will saturate it, and then heated to cause the absorption of the paraffine, as set forth, may, when finished and in its after use, be subjected to a temperature equal to or greater than that which will melt the paraffine, without causing the latter to exude from or flow upon its surface, inasmuch as the paraffine, when melted, will remain by the capillary action of the paper in the porous interior of the latter.

Another and important advantage gained by the use of the process set forth is that a great saving in paraffine or other substance employed is obtained, inasmuch as by it no greater quantity of the substance of the bath is used than is necessary to properly treat the paper.

I claim as my invention—

The process of treating articles of paper or straw-board, which consists in immersing the article in melted paraffine or other similar substance or substances when said article is at a temperature lower than the melting-point of the said paraffine or other substance or substances, so as to form a film or coating upon its surface, and then subjecting the article thus coated to heat, substantially as described.

WARREN B. HOWE.

Witnesses:
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