Sept. 11, 1923. 1,467,595

A. M. WESTLING

PROCESS AND APPARATUS FOR APPLYING TRANSFERS TO CONVEX, CONCAVE, AND OTHER ARTICLES

Filed Oct. 24, 1922

Fig. 1

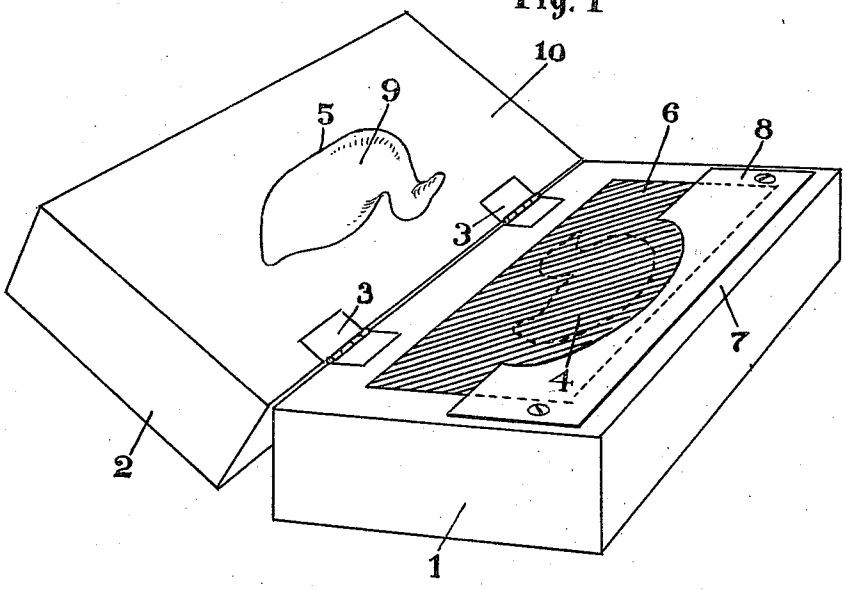
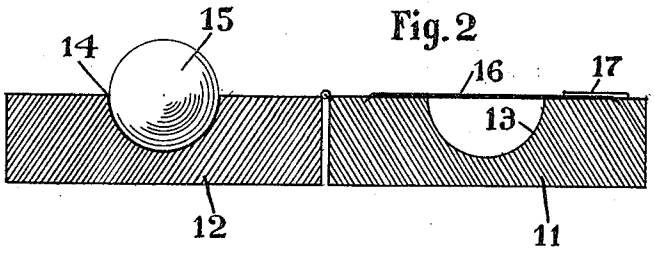


Fig. 2



David M. Westling

INVENTOR.

BY Heard Smith & Pennant

ATTORNEYS.

Patented Sept. 11, 1923. 1,467,595

UNITED STATES PATENT OFFICE.

ARVID M. WESTLING, OF BOSTON, MASSACHUSETTS.

PROCESS AND APPARATUS FOR APPLYING TRANSFERS TO CONVEX, CONCAVE, AND OTHER ARTICLES.

Application filed October 24, 1922. Serial No. 596,536.

To all whom it may concern:

Be it known that I, ARVID M. WESTLING, a subject of the King of Sweden, and resident of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Processes and Apparatus for Applying Transfers to Convex, Concave, and other Articles, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to improvements in processes and apparatus for applying transfers, such as decalcomania to a concave convex or irregular surface of an article. Heretofore transfers of this character have been applied to articles of this character by hand and usually any relatively small sections have to be accurately positioned since the curvature of the surface will not permit a flat sheet of transfer to be applied thereto. The application, therefore, of transfers to curved or irregular surfaces has been slow and expensive and has required the employment of skilled operators.

The present invention comprises a process by means of which transfers of this character can be readily and accurately applied to curved or irregular surfaces by unskilled labor.

A further object of the invention is to provide a convenient apparatus by which the process of applying a transfer, such as decalcomania to convex, concave or irregular surfaces may be performed.

These and other objects and features of the invention will more fully appear from the following description and the accompanying drawing and will be pointed out in the claims.

In the drawing:

Fig. 1 is a perspective view of an apparatus for performing the process of applying a transfer to a curved object which is represented as a decoy duck; and,

Fig. 2 is a view in vertical section of a similar apparatus for applying a tranfer to a convexedly curved object such as a sphere.

The process broadly consists in placing the transfer upon a suitably moistened flexible, and preferably elastic, support, coating the surface of the article to which the transfer is to be applied with a suitable adhesive and forcing the transfer and its flexible supporting member into a matrix which is complementary to the surface to which it is applied by relative movement of the article and matrix so that the resilient member with the transfer thereupon will be caused to conform to the contour of the irregular surface by the action of the matrix and each unit of area of the transfer pressed against such surface with sufficient force to cause proper adhesion of the transfer to the surface.

An illustrative apparatus for the performance of the process is shown in the accompanying drawing and comprises a plurality of blocks 1 and 2 which are pivotally connected together along adjacent edges by hinges 3. The blocks 1 and 2 are provided with complementary cavities forming matrices 4 and 5 which are represented herein as conforming to the contour of a decoy duck to which a transfer, such as decalcomania is to be applied to represent the feathers, etc. of the duck. A sheet 6 of flexible material, preferably of thin rubber, is mounted upon the upper face 7 of the block 1 and extends smoothly over the cavity 4. Desirably a guide 8 in the form of a plate of thin material is secured to the upper surface 7 of the block 1 and serves properly to position the transfer upon the sheet of flexible material so that when the block 2 is folded over it will be applied accurately to the decoy duck 9 and when the latter is pressed into the matrix 4 the transfer will be in such position as to be smoothly pressed against its curved and irregular surfaces.

The transfer sheet is then placed upon the flexible surface 6 which has previously been moistened to enable the transfer to be readily detached from the sheet upon which it is supported. The decoy duck 9 is then placed in the cavity 5 of the block 2 and the block 2 folded over upon the block 1 so that the portion of the decoy duck which extends above the surface 10 of the block 2 is forced down upon the transfer thereby pressing the transfer and its flexible supporting sheet into the cavity 4.

The flexible and preferably elastic material is placed under tension as the duck is forced into the cavity and consequently presses upon each unit of the surface of the article to which the transfer is applied with substantially equal pressure, thereby accu-

rately and effectively applying the transfer to the surface.

It will be understood, of course, that the cavity over which the flexible and preferably elastic sheet is stretched is slightly larger than the article to allow for the thickness of the flexible member.

Fig. 2 of the drawing shows similar blocks 11 and 12 having respectively cavities 13 and 14 adapted to receive a convex article such as a ball 15. The sheet 16 of flexible material is secured in any suitable manner to the upper surface of the block 11 over the cavity and a guide 17, similar to the guide 8, is likewise provided for positioning the transfer sheet.

In the application of transfers to curved or irregular surfaces it is usually necessary to apply the transfer in sections which are properly cut to match when applied to the article and these sections are successively applied in the manner heretofore described.

It is to be understood that the means for performing the process which is disclosed herein is illustrative and not restrictive and that various other devices may be employed. It is further to be understood that the complementary blocks containing the matrices may be in a greater number of sections than herein illustrated within the meaning and scope of the following claims.

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

1. The method of applying transfers to a convex, concave or irregular surface of an article which consists in placing a transfer upon a moistened flexible sheet, coating the surface to which the transfer is to be applied with a suitable adhesive and forcing the transfer and its flexible supporting sheet into a matrix complementary to the surface to which the transfer is to be applied by relative movement of the article and said matrix.

2. The method of applying transfers to a convex, concave or irregular surface of an article which consists in successively applying sections of the transfer by placing a section upon a moistened flexible supporting sheet, coating the surface to which the transfer is to be applied with a suitable adhesive, forcing the transfer section and its flexible supporting member into a matrix complementary to the surface to which it is to be applied by relative movement of the article and the matrix.

3. The method of applying transfers to a convex, concave or irregular surface of an article which consists in placing a transfer upon a moistened sheet of elastic material, coating the surface to which the transfer is to be applied with a suitable adhesive and forcing the transfer and the sheet of elastic material into a matrix complementary to the surface to which it is to be applied by relative movement of the article and the matrix.

4. An apparatus for applying transfers to a convex, concave or irregular surface of an article comprising a matrix complementary to the surface of the article to which the transfer is to be applied, and a supporting sheet of flexible material for the transfer mounted upon said matrix adapted to receive the transfer and to be forced into the matrix by application of the article thereto.

5. An apparatus for applying transfers to a convex, concave or irregular surface of an article comprising a plurality of cooperating matrices complementary to the surface of the article to which the transfer is to be applied, a supporting sheet of flexible elastic material mounted upon one of said matrices adapted to receive the transfer and means for guiding said matrices whereby the article when supported upon one of said matrices may be moved thereby relatively to the other matrix to force the transfer and its elastic support into the other matrix and thereby properly apply the transfer to the surface of the article.

6. An apparatus for applying transfers to a convex, concave or irregular surface of an article comprising a plurality of cooperating matrices complementary to the surface of the article to which the transfer is to be applied, a supporting sheet of flexible elastic material mounted upon one of said matrices adapted to receive the transfer, a guide for the transfer sheet carried by the matrix member upon which the elastic sheet is mounted and means for guiding said matrices whereby the article when supported upon one of said matrices may be moved thereby relatively to the other matrix to force the transfer and its elastic support into the other matrix and thereby properly apply the transfer to the surface of the article.

In testimony whereof, I have signed my name to this specification.

ARVID M. WESTLING.