UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN THE MANUFACTURE OF ARTISTS' CANVAS.

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To all whom it may concern:

Be it known that I, WILLIAM LEVIN, of New York city, have invented certain new and useful Improvements in the Manufacture of Painters' Canvas, of which the following is a specification:

Of late years the production of a class of oil-paintings known as "trade-pictures," to meet the popular demand for cheap art, had reached such an extent that it became an important point to improve and cheapen the materials entering into these pictures. One of the chief items of expense in these materials is the canvas, and the problem has been to use cheap or rough fabrics, such as burlaps, &c., and yet be able to form a proper painting-surface on the same. The aim of my invention has therefore been to so improve the mode of manufacture as to not only facilitate the production and improve the quality, but to admit of the use of such fabrics and yet form a perfect painting-surface thereon. While, therefore, my efforts were more especially directed to the production of a cheap canvas, they have resulted in the perfection of a system which is applicable to the production of the finest quality of canvas, where a fine fabric is used, as to the cheaper qualities, where a rough fabric is employed.

My invention consists in the order of the operations, as well as in the combination of materials used to produce the painting-surface, which will be hereinafter fully set forth, and each feature of novelty distinctly indicated in the concluding clauses.

In trade-pictures there are generally two qualities—a better one, in which a canvas of a linen or jute fabric is used, and a cheaper quality, made on thin cotton sheeting or muslin. The former will be first described.

For the canvas I usually employ a hemp fabric made for linings, or a jute fabric, or burlap made for bagging, and which is furnished in pieces thirty-eight inches wide and eighteen feet long. As usual in the manufacture of canvas, the first operation is to fasten these pieces on a straining-frame and to apply a sizing-coat of glue, the surface being rubbed down with pumice-stone as the glue is applied. This coat is then allowed to dry, after which, according to the usual method, the canvas is finished while yet on the strainer. According to my system, however, as soon as the glue is fully dry I remove the sheet from the strainer, and, after the glued surface has been pumiced or smoothed, I place the sheet flatwise on a long table, and apply the priming and finishing coats by hand, or by passing the sheet horizontally through a special machine.

The impression appears to have heretofore prevailed among canvas-makers that it was necessary to perform all the operations while the canvas was on the strainer, and that it could not be removed till finished; but this has proved to be a mistake, for it is found that when the glue is fully dry it sets the strain in the canvas, so that it remains permanently taut and even, and admits of being thus removed, not only without objection, but with a great practical advantage, for it greatly facilitates the manufacture. The surfacing-coats are much more easily applied when the canvas is so removed and placed in a convenient position on a table or other horizontal support, and, moreover, the straining-frame is then free for the attachment of other pieces, on which the sizing-coat may be drying while the first piece is being finished, thus resulting in convenience and economy of time and labor.

The priming or surfacing coat, which is applied at this stage, is composed and applied as follows: Twelve pounds of whiting is mixed with two quarts of water, and to this is added four ounces dry glue soaked in one pint of cold water and dissolved in one pint of hot water. When these are mixed I add six pounds of boiled linseed-oil, to which six ounces of patent drier has been added, and the whole is then thoroughly incorporated by vigorous stirring and blending in an agitator or beater, or by grinding in a paint-mill. This forms an elastic, tough, and both water and oil proof composition, having a combination of properties which peculiarly fit it for the surfacing of the canvas. For the sizing-coat I prefer to mix twenty-five per cent. of this composition with the glue, which gives a much better effect than glue alone.

The sized sheet of canvas being now laid upon a long flat table, this priming composi-

tion is applied to it, at the atmospheric temperature, by means of a large pallet-knife, with which it is uniformly spread over the surface, it having qualities which enable it to be thus spread with uniformity and ease. This coat is, however, preferably applied by means of a special machine which forms the subject of a separate application of even date with this. In this machine the canvas is passed horizontally between the surface of an underlying roller and the edge of an overlying knife which extends across the whole width of the canvas. A quantity of the surfacing composition is deposited directly on the canvas in front of the knife, which is arranged at a tangent to the roller, and the composition is spread smoothly and perfectly upon the surface of the canvas as it is drawn under the edge of the knife.

The qualities of this composition are such as adapt it to be applied in this manner by a knife, which is a very simple and rapid method, for, being of an emulsive nature, it possesses an unguent property which enables it to be thus spread with great ease and perfection. Another valuable quality of this paint or composition for this purpose is, that although it does not instantly dry, yet it "sets" very quickly, so that as the sheets are delivered from the machine they can be placed one on top of the other without any danger of offset, and so remain till they dry, which takes place about as quick as ordinary paint. This is of great advantage in allowing of so convenient and compact an arrangement of the drying sheets, which, being quite large, would otherwise cause great inconvenience in their care and management.

It will be readily understood that, as the roughnesses on the surface of a coarse fabric are greater and the hollows deeper, a comparatively thick coat, at least at certain points, is required to form a perfect surface over the whole; hence the compositions usually employed would be quite unsuitable, for even on the fine fabrics, where they are used with a thin coat only, they are liable to crack and chip off. The composition which I employ, however, adheres so strongly to the canvas, and is of such a flexible nature, that in a coat thick enough to fill the deepest hollows of the roughest fabric it is found to have no tendency to crack or peel off.

An objection which is often found with canvas is the striking of the oil through the back of the fabric. This appears to be totally prevented by the treatment which I employ, for while the surfacing composition is drying on the canvas the gluey matter appears to gravitate toward the fabric, while the oily matter appears to rise to the surface, forming a thin film or skin over the painting-surface of the canvas admirably adapted to receive the colors of the picture.

At this stage, after the canvas is dry, it forms one quality of finished canvas, known as "absorbent," from the colors drying without gloss, and for a certain class of work is preferred. For general work, however, non-absorbent canvas is desired, on which the colors dry bright. To produce this the surface of the absorbent canvas, when fully dry, is smoothed by a sandpapering or pumicing machine, and it is then treated with a second surfacing-coat, applied in the same manner as the former, either by hand or machine, and composed as follows, being a formula specially adapted for the purpose and original with myself: Twenty pounds of white lead, twenty pounds of whiting, eight pounds of boiled linseed-oil, three ounces of borate manganese, two pounds spirits turpentine, and a little raw sienna or other coloring matter for tinting.

When this coat is dry the canvas is finished and is then ready to be cut and tacked on the stretchers.

For the cheaper pictures, in which thin muslin is employed, this muslin is surfaced by being directly coated, first with the surfacing or priming composition, and, after this is dry, with the finishing-coat of white lead, &c., in the same manner as the canvas, but without any previous straining or sizing. This is made very rapidly, and forms a painting-medium which is much superior to and cheaper than what has been previously used for the same purpose.

The ingredients of the priming composition, as will be understood, may be substituted by their substantial equivalents thus: Rice-flour paste forms a good substitute for the glue and plaster-of-paris for the whiting; but the ingredients specified are found the most satisfactory.

By this mode of treatment I am able to produce an excellent quality of canvas with even very rough and cheap fabrics and at a great saving in cost; and while this treatment was more especially designed for rough fabrics, it is as applicable to the production of the best canvas where the finest fabrics are employed, and without any change.

What I claim as my invention is—

1. The process herein described for the manufacture of painters' canvas, consisting in first coating the surface with size while the fabric is stretched on a strainer, then removing the sized sheet therefrom when dry, and coating the surface with the surfacing preparations while the sheet is placed flatwise on a table or other horizontal support, substantially as herein set forth.

2. The process described for the manufacture of painters' canvas, consisting in treating the painting-surface with a mixture of water-dissolved glue, whiting, and linseed-oil, substantially as herein set forth.

3. The process for the manufacture of painters' canvas, consisting in first coating the sur-

face with size, secondly with a mixture of glue, whiting, and linseed-oil, and thirdly with a mixture of white lead, whiting, and linseed-oil, substantially as set forth.

4. In the manufacture of painters' canvas, the employment of a surfacing-paint composed of white lead, whiting, linseed-oil, borate manganese, and spirits turpentine, in substantially the proportions named, as herein set forth.

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Witnesses:
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