UNITED STATES PATENT OFFICE.

JOSEPH WARREN WATTLES, OF CANTON, MASSACHUSETTS.

COMPOSITION AND ARTICLE OF MANUFACTURE FOR ADDITION TO AND IMPROVEMENT IN SIZING COMPOUNDS.

SPECIFICATION forming part of Letters Patent No. 306,883, dated October 21, 1884.

Application filed September 17, 1884. (No specimens.)

To all whom it may concern:

Be it known that I, JOSEPH WARREN WATTLES, a citizen of the United States, residing at Canton, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in a Composition and Article of Manufacture for Addition to and Improvement of Sizing Compounds, of which the following is a specification.

In starch sizings as hitherto made and used with warps there have been serious defects. Such sizings often failed to penetrate the body of the yarn or warp, were difficult to dry, and if used in an undried or damp state were liable to mildew and spoil the cloth. They often caused the yarn to stick together or stick to the slasher-cylinder. They often failed, also, to reliably cement the fiber to the body of the warp or yarn, so that in the process of weaving these fibers would be loosened up, causing wear on the warp and on the loom-harness. In view of these facts it has seemed exceedingly desirable to so improve the sizing that it should be caused to penetrate equally and adhere firmly to the yarn, cementing down the fibers and making the yarn smooth and strong, so that it should cause little if any wear on the loom-harness. At the same time it should dry quickly, yet be adapted to be used in a damp condition without fear of mildew or injury to the cloth, and should be of such quality as not to cause the yarns to stick together or stick to the slasher-cylinders.

The object, therefore, of my invention is to furnish a new composition for addition to the ordinary starch sizings, which, added to such sizings, shall so improve it that the results set forth may be attained, and, furthermore, to furnish such an improved composition, put up dry in packages, as a new article of manufacture, for addition to the sizings as ordinarily made.

To these ends the present invention is an improvement on the composition for the improvement of sizings set out in Patent No. 292,269, granted me January 22, 1884. In such patent the composition for addition to sizing is composed of acetic acid, starch, and an oleaginous matter, with water sufficient to make it liquid. This composition, added to ordinary sizing, so improves it that the yarn dressed with it works better in the loom, does not readily mildew, is less liable to fermentation, and aids in holding the starch in suspension, preventing its subsidence. There is, however, difficulty in securely and safely shipping such a compound to points distant from its place of manufacture, in that it is a liquid, requiring for shipment expensive water-tight cans or packages. In my present invention, therefore, I use the same ingredients combined so as to form a dry or comparatively dry powder, which may be put up in ordinary packages, as flour and meal are put up, and so shipped or forwarded to the points of use or consumption.

To prepare this composition, one part of oleaginous matter, one part of acetic acid, and two parts of dry starch are thoroughly mixed together. So mixed, the starch acts as an absorbent of the acid and oleaginous material, and the result is a dry or comparatively dry powder, which is then put up in packages of definite size and of the amounts necessary to be added to different quantities of ordinary sizing for its improvement. The oleaginous matter may be any of the ordinary greases or oils, either mineral, animal, or vegetable. I have found, however, that the residuum remaining after purification, or "foots," as technically termed, of any such oils—for instance, whale-oil, fish-oil, cotton-seed oil, linseed-oil, or of any other grease or oil—is an economical and efficient oleaginous matter to use in this composition. Tallow or other solid grease may be used as the oleaginous matter, in which case it should be melted and put into a fluid condition for mixture with and absorption by the starch or starchy base.

In order to improve the antiseptic qualities of the composition and give it also an agreeable odor, an oleaginous material having a pleasant odor and well-defined antiseptic qualities may be used; or a portion thereof may be substituted for a portion of the ordinary oleaginous material or used in addition thereto. I have found that a small percentage of oil of sassafras is a useful agent for these purposes, and hence in practice I add a small percentage thereof to the composition. The addition of a small percentage—say one or two per cent.—of this compound to the starch sizing as ordi-

narily made so improves it that it cements the fibers firmly to the body of the yarn or warp, preventing its chafing or roughening in weaving, lessens the wear on the loom-harness, leaving the woven cloth of better color, obviates danger of mildew, and lessens the amount of starch necessary in the sizing. It also causes the size to penetrate more evenly and thoroughly the body of the warp or yarn, and enables a larger amount to be dressed or sized in the same time, while the yarn or warp itself is rendered firmer yet softer, and the woven cloth is devoid of harshness or roughness. These results are exceedingly desirable, and can be attained by the use of the composition herein set forth.

It is evident that any starch or base containing starch may be used in this composition—for instance, potato, corn, or wheat starch, or flour, containing as it does a large percentage of starch—without departing from the spirit of the invention, and also that the proportions typically herein set forth may be varied so long as sufficient starch or starch base is used to absorb the other ingredients and leave the composition in a dry or comparatively dry or pulverulent condition for addition to ordinary sizings.

This composition may be added to the ordinary sizing at any time, either at the time of making or after it has been made, and to the sizing in any condition, either fermented or unfermented.

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

1. The improved composition of matter for addition to and improvement of ordinary starch sizings, consisting of acetic acid, oleaginous matter, and starch as an absorbent thereof, substantially as set forth.

2. The improved composition of matter for addition to and improvement of ordinary starch sizings, consisting of acetic acid, the foots or residuum of whale, fish, or seed oils, and starch as an absorbent thereof.

3. As a new article of manufacture, a composition for addition to and improvement of starch sizings, consisting of acetic acid, oleaginous matter, and starch put up in packages in a dry condition, substantially as set forth.

4. A composition for addition to and improvement of ordinary sizings, consisting of acetic acid, oleaginous matter, and starch, with oil of sassafras or other antiseptic and perfuming agent, substantially as set forth.

In testimony whereof I hereby affix my signature in presence of two witnesses.

JOSEPH WARREN WATTLES.

Witnesses:

ALBERT E. MOYLAN,

EDWARD F. BARTLETT.