

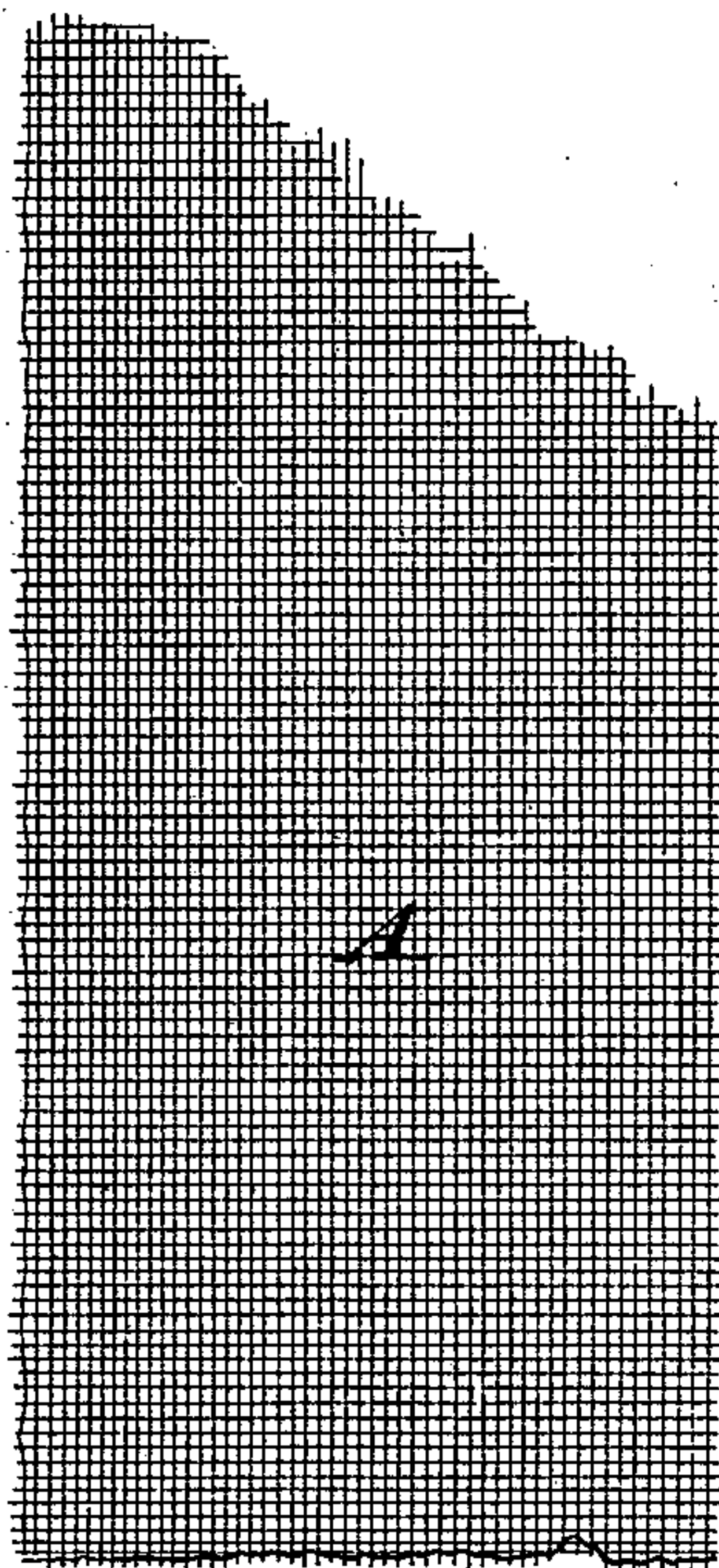
(Model.)

C. F. HARTMANN.  
Treating Textile Fabric.

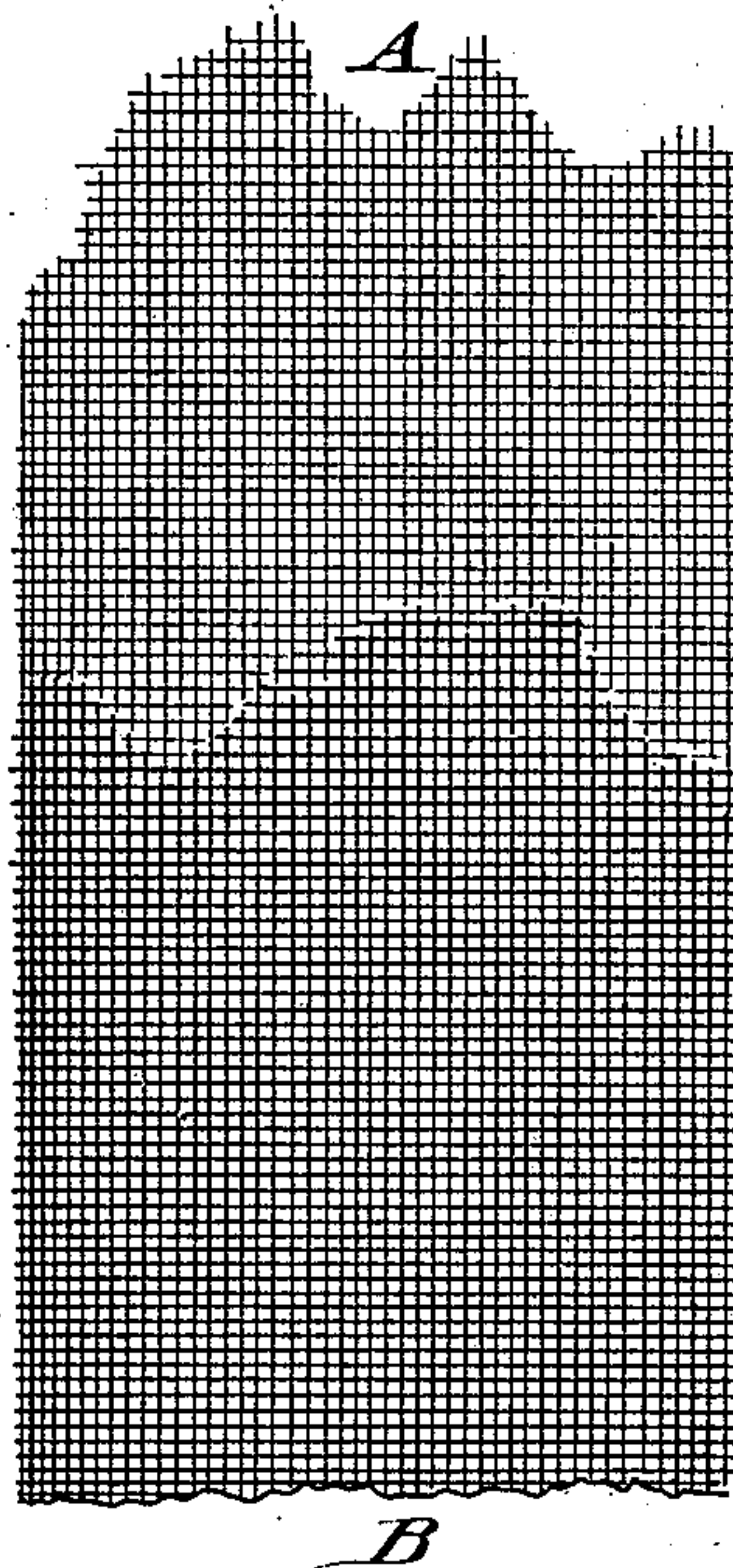
No. 227,248.

Patented May 4, 1880.

*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

CARL F. HARTMANN, OF WÜSTE-WALTERSDORF, PRUSSIA, GERMANY.

## TREATING TEXTILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 227,248, dated May 4, 1880.

Application filed April 1, 1880. (Model.)

*To all whom it may concern :*

Be it known that I, CARL FRIEDRICH HARTMANN, of Wüste-Waltersdorf, in the Province of Silesia, Kingdom of Prussia, German Empire, have invented Improvements in Treating Textile Fabrics, of which the following is a specification.

This invention has reference to an improved method of treating light cotton and linen fabrics with cellulose or vegetable fiber in connection with or without other finishing substances, for the purpose of filling up the fabrics, so that the same are better adapted to be sewed on the machine and have the appearance of a more closely-woven fabric. The demand for fabrics of such kinds is very large, as they are used for cloth-coverings, tracing-linen, window-shades, light linings for clothes, interior linings of paper collars and cuffs, in the manufacture of dolls, and for other purposes. Heretofore these light cotton and linen fabrics were finished for giving them the proper degree of fullness with various mineral substances, such as clay, plaster-of-paris, chalk, sulphate of barytes, sometimes even with substances detrimental to health. They were applied by the usual glutinous substances, such as starch, glue, gum, &c., and thereby filled. The main disadvantage of this method of filling consisted in the disagreeable dust which these fabrics give forth when working them up or when in use, as well as the breaking of the filling on folding, which exposes the light character of the fabric. In some cases, as in coverings for woolen clothes, the dust of the mineral filling is highly objectionable, as it affects the cloth. Furthermore, these fabrics cannot be sewed on the machine, as the dust settles into the different parts of the machine and necessitates frequent cleaning.

These objectionable features I have avoided by my improved filling of cellulose or vegetable fiber, by which the fabrics assume the appearance and properties of heavier and more expensive fabrics.

In the accompanying drawings, Figure 1 represents a front view of the fabric before being treated according to my method, and Figs. 2 and 3 a front view and vertical transverse section of the same after treatment.

Similar letters of reference indicate corresponding parts.

A is the fabric; B, the filling, which is embodied into the fabric in the following manner: The cellulose or vegetable fiber, such as wood or straw fiber, as well as cotton or linen fiber obtained from the waste of mills, is carefully ground into very small fibers by a rag-engine, corresponding to that used in the manufacture of paper. These fibers are then placed, together with liquid starch or similar binding substances, into a cylindrical mixer provided with a perforated double bottom of copper, which is covered with hair-gauze. Inclined wooden stirrers are rotated in the mixing-cylinder by suitable transmitting mechanism. The perforated bottom is connected with a valved steam-tube, and serves for distributing the steam evenly throughout the mass, which is agitated by the stirrers and boiled by the action of the steam. The thoroughly-boiled mass is drawn off through an opening with a tightly-fitting slide at the side of the mixing-cylinder. The proportion of starch to be added to the fiber varies from ten to thirty per cent., according as the fabrics have to be soft or stiff.

The filling thus obtained by the intimate union of the fabrics and binding substances is then transferred by an impregnating-machine to the fabrics. This machine consists of a lower larger and an upper smaller roll of metal. Below the lower roll is a copper tank for the filling material. The lower roll enters the filling and transfers it to the fabric. The rolls are rotated by suitable gearing in such a manner that they run with friction and at different speeds. The degree of friction is adapted to the character of fabrics to be impregnated. The fabric which has been saturated with the filling material passes under considerable pressure through the rolls.

On a level with the axis of the upper friction-roll is arranged a rubber roll, which is pressed firmly on the upper friction-roll by means of sliding and guided journal-bearings and weighted levers. This rubber roll is revolved at considerably greater speed than the upper roll in the direction of the fabric, and serves to produce the perfectly uniform distribution

of the fibers over the interstices between the threads, as well as over the crossings of the same, where, owing to the pressure of the metal rolls, no fibers have adhered.

5 The impregnated fabrics are slowly dried in heated rooms, but not on cylinders, and are then ready to be finished in any other manner, according to the use for which the fabric is required. During the drying process the minute  
10 and evenly-distributed fibers are united so intimately and firmly with the threads of the fabric that a separation by handling, folding, or wearing is utterly impossible, and that repeated soaking and washing of the fabric is re-  
15 quired for thoroughly removing the fibrous filling.

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

1. As a new article of manufacture, a textile 20 fabric impregnated with a filling composed of cellulose or vegetable fiber and a binding substance, substantially as set forth.

2. The method herein described of treating light textile fabrics, consisting in impregnating 25 them with a filling of cellulose and a suitable binding substance, and then slowly drying the same, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of 30 two subscribing witnesses.

CARL FRIEDRICH HARTMANN.

Witnesses:

OTTO FRAÜKY,  
EMANUEL KEMPUR.