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UNITED STATES PATENT OFFICE.

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PAPER-MAKER'S FELT.

No Drawing.

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To all whom it may concern:

Be it known that I, EDMUND N. HUYCK, a citizen of the United States of America, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Paper-Makers' Felts, of which the following is a specification.

My invention relates to papermakers' felts. Since endless felts were first used in papermaking machines it has been necessary to have a guide line or stripe on the felts in order that the operator might be able to see whether or not they were running true.

Papermakers' felts are woven with warp and weft yarns which cross at substantially right angles. After the fabric has been woven it receives a heavy fulling or felting in which process they are shrunk to very much less than their original size. Should the felt not run true, the relative positions of the yarns change so that the weft yarns no longer cross the warp yarns at substantially right angles, and this change in the relative positions of the warp and weft yarns will reduce the porosity of the fabric at the point or points therein where it has pulled out of true. It is in order to guard against this reduction in porosity at points in the fabric, that it is necessary to have a guide line or stripe by which the operator may judge whether or not the felt is running true in the paper machine.

When endless felts were first used in papermaking machines they traveled at a comparatively low speed and it was found that a single colored yarn, woven into and across the fabric, formed a satisfactory guide line or stripe. As the machines were improved the speed was increased, and it was found necessary to increase the width of the guide line in order that it might be readily observed by the operator as it passed at the increased speed, and enable him to judge whether or not the felt was running true in the machine. This widening of the guide line or stripe was accomplished by increasing the number of colored yarns which formed the line or stripe.

On the more modern papermaking machines, in which the felts are run at a speed many times as great as in the pioneer machines, it is desirable that the guide line or

stripe be many times as wide as those first used; in practice it has been found that a stripe having a width of about two inches will prove satisfactory as a guide line for any size of paper maker's felt.

To produce the required guide lines or stripes in paper makers' felts, it is the present practice to weave into the fabric the necessary number of colored yarns which have been dyed in the skein; and great care is exercised to insure that the colored yarns are the same as the uncolored yarns which are used to form the rest of the fabric, and that in the dyeing process their nature is changed as little as possible.

Notwithstanding the great care taken in the dyeing of the yarns used to form the stripe, it is found that in felts for modern machines in which a comparatively wide stripe is necessary, the part of the fabric in which such stripe is formed does not full or felt to exactly the same degree as the other parts; and the result is a difference in the degree of porosity of the stripe portion and the remainder of the fabric, and there sometimes results a difference in the thickness of the colored and uncolored portions of the finished fabric. It is also found that in many cases there is a difference in the wearing quality of the colored and uncolored yarns.

When all parts of the felt are not substantially uniform the product of the paper making machine on which it is used will be imperfect; and if there is an appreciable difference between the stripe portion of the felt and the remainder thereof it may cause breaks in the sheet.

The object of my present invention is to produce improved paper makers' felts which will have the required sharply defined and comparatively wide guide line or lines or stripes and which will be of uniform strength and texture throughout.

I accomplish my object by weaving the endless fabric in the usual manner but without weaving in differently colored yarns; after the fabric has been woven it is fullled or felted to the desired degree. After the fulling or felting of the fabric has been completed, I form thereon and across the fabric a stripe or colored portion of any desired width by applying to said fullled or felted fabric a suitable color-

ing matter, which may be a coal tar product such as analine or alizarine, or a vegetable product such as indigo or logwood. As any coloring matter which may be applied to
5 form a stripe across the fabric after it has been fulled or felted and without causing any appreciable difference between such striped portion and the balance of the fabric, may be used without departing from
10 the spirit of this invention, I do not wish to limit myself to any particular dye..

When the stripe is applied or made on the fabric after the felting process is completed by the application thereto of one of the
15 above mentioned dyes, or a suitable substitute therefor, it will be found that there is no appreciable difference between the striped portion of the fabric and the remain-

der thereof, either as to the degree of porosity, thickness, or wearing quality.

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I claim:

1. Endless papermakers' felts having a guide line formed thereon by the application of a suitable dye after the completion of the
25 fulling or felting thereof.

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2. Endless papermakers' felts having a guide line formed thereon after the completion of the fulling or felting thereof, by the application of a dye which will have no appreciable effect upon said felt other than to
30 color the portion thereof to which it is applied.

In testimony whereof I have affixed my signature.

EDMUND N. HUYCK.