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2,827,684

BACK GREYS

Frank Bromley, Swarthmore, Pa., assignor, by mesne assignments, to The Eddystone Manufacturing Company, Eddystone, Pa., a corporation of Pennsylvania

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This invention relates to the endless blotting belts or so-called "back greys" used in textile printing.

The back grey of my invention is made of woven nylon fabric of the construction hereinafter described. Despite the fact that the back grey of my invention is continuously subjected during use to washing and drying operations, I have found that it does not substantially swell or contract or thicken or thin during such treatment and that when the machine is momentarily stopped during printing, there is no objectionable contraction of the fabric on the drying cans, nor objectionable swelling where the fabric is immersed in the washing unit. Appreciable swelling or contracting tends to produce non-uniform end results. I have also found that my back grey has ideal moisture-carrying capacity, being neither too high nor too low, and that its moisture-carrying capacity remains substantially constant during the life of the fabric. Waterproofed cotton cloth changes absorbency in use and a rubber blotting blanket has no absorbency. Excessive absorbency gives unsatisfactory and non-uniform results.

It has been surprising to find that a nylon back grey blotting web is capable of serving in this way, because nylon fibers have almost no capacity to absorb moisture. Nevertheless, it has been found that fabrics composed of such fibers have an astonishingly high capacity to entrain moisture upon their surface when constructed in accordance with the present invention.

With my nylon back grey, it is possible to obtain uniform prints at all times on both light and heavy fabrics, and the appearance in the printed goods of the irregularities which are incident to the use of back greys made of cotton and the like are practically eliminated.

This is a most unexpected discovery, because it has long been the custom in printing textile fabrics to proportion the weight of the back grey web to the weight of the fabric being printed, even though this has necessitated the costly and time-consuming step of removing an endless back grey web from the printer, the washing stages and the drying cans and substituting one of a different construction. The back grey web constructed in accordance with the preferred embodiment of this invention may be used with equally good results in association with practically any fabric capable of being printed, ranging all the way from very light and sheer fabrics to extremely heavy and coarse ones.

Moreover, I have found that the nylon back grey of my invention is characterized by the substantial absence of scrimping or puckering by reason of which the necessity of scrimp removers is practically eliminated.

Since the nature and use of endless back grey webs is at this time well understood in the art, this subject will be only briefly referred to. In accordance with long-established practice, illustrated, for example, in my prior patent, No. 2,175,051, dated October 3, 1939, an endless back grey blotting web runs between the fabric being printed and the printing blanket in an ordinary textile printing machine. The printing blanket protects the resil-

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ient lapping which surrounds the printing cylinder against any possible penetration of moisture. The blotting web receives the moisture which penetrates through the fabric being printed or which spreads beyond the edges of that fabric, and carries this moisture, which usually contains coloring matter present in printing paste, to a washing stage where the endless blotting web is passed through several washing and scrubbing units to remove coloring matter, after which the blotting web is passed over a series of drying cans and back again to the printer. The printing rolls, as is well understood, are spaced radially outwardly from the printing cylinder, and transfer printing paste directly to the goods being printed.

In the preferred construction, the nylon back grey fabric has a 60 x 42 count, weighs 6.4 ozs. per sq. yd. and is made of substantially 210 denier nylon, 2-ply both warp and filling. This construction is used for both the 47" and the 57" width, the customary widths employed.

I have also successfully used, for the same widths, a nylon fabric having a count of 64 x 46, weighing 7 1/4 ozs. per sq. yd., made of 150 denier nylon, 3-ply both warp and filling.

I have also used for the same widths a nylon fabric of a count of 64 x 44, weighing 9.42 ozs. per sq. yd., made of 100 denier nylon, 3-ply both warp and filling.

This application is a continuation-in-part of my copending application, Serial No. 67,037, filed December 23, 1948, now abandoned. Prior to the filing of that application, the various fabric constructions just discussed were prepared, in order to ascertain the limits of utility. However, a fabric constructed in accordance with the preferred embodiment is so versatile as to be capable of filling the requirements of the trade, and it is not necessary to supply any other weight in order to accommodate differences in the weight of the goods being printed. I, therefore, make no claim to endless back grey fabrics which are not functionally equivalent to the preferred embodiment described first above.

Nylon fabrics having admixed therewith a portion of other fibers, such as cotton, may be used, but the valuable properties discovered and described above are correspondingly decreased and I prefer to use 100% nylon fabrics. In all cases, the fabric must be woven close (or tight) enough to prevent the printing paste from penetrating through the fabric.

The nylon fabric is preheated or cured before being put into use by heating to a temperature at least equal to the temperature to which it is subjected on the drying cans when in use and desirably somewhat thereabove, and for a time sufficient to remove strain and stresses in the material without causing undue loss in strength. Usually the drying cans are heated to a temperature of about 240° F., and it is desirable to heat the fabric somewhat thereabove. I prefer to cure at a temperature of from 275° F. to 300° F., and for a time ranging from 8 minutes at the high temperature to 12 minutes at the lower temperature, but in no case should the temperature be such as to cause the nylon to soften. The fabric may also be preheated by passing it over a roll heated from 400° to 450° F. and for a period of time ranging from 15 to 2 seconds, provided the temperature and time are carefully controlled.

It is, of course, apparent to those skilled in the art that the weight and construction of nylon fabric need not be precisely the same as that described above, but that this might be varied somewhat by increasing or reducing the thread count in either direction, without significantly changing the basic structure of the goods.

By the use of my improved back grey, the size of the washer and the number of drying cans can be reduced over what is required for cotton back greys.

I claim:

1. An endless back grey blotting web for textile printing machines comprising a fabric woven from nylon yarns, said fabric having a weight of approximately 6.4 ozs. per sq. yd., with a count of substantially 60 x 42, the yarns being of 210 denier nylon, 2-ply, both warp and filling.

2. The endless back grey blotting web of claim 1, cured at a temperature ranging from substantially 240° F. to short of the temperature at which the nylon softens for a period of from substantially 12 minutes to substantially 8 minutes.

References Cited in the file of this patent

UNITED STATES PATENTS

2,175,051	Bromley	Oct. 3, 1939
2,222,143	Farnworth	Nov. 19, 1940
2,252,554	Carothers	Aug. 12, 1941

OTHER REFERENCES

America's Fabrics by Bendure et al., Copyright 1946, MacMillan Company, New York, New York.
 Artificial Fibres by Moncrieff, Copyright 1954, John Wiley and Sons, Inc., New York, New York.