March 1, 1938. J. D. ROBERTSON ET AL 2,110,118

FABRIC AND METHOD OF AND APPARATUS FOR TREATING THE SAME

Filed Sept. 14, 1936 2 Sheets-Sheet 1

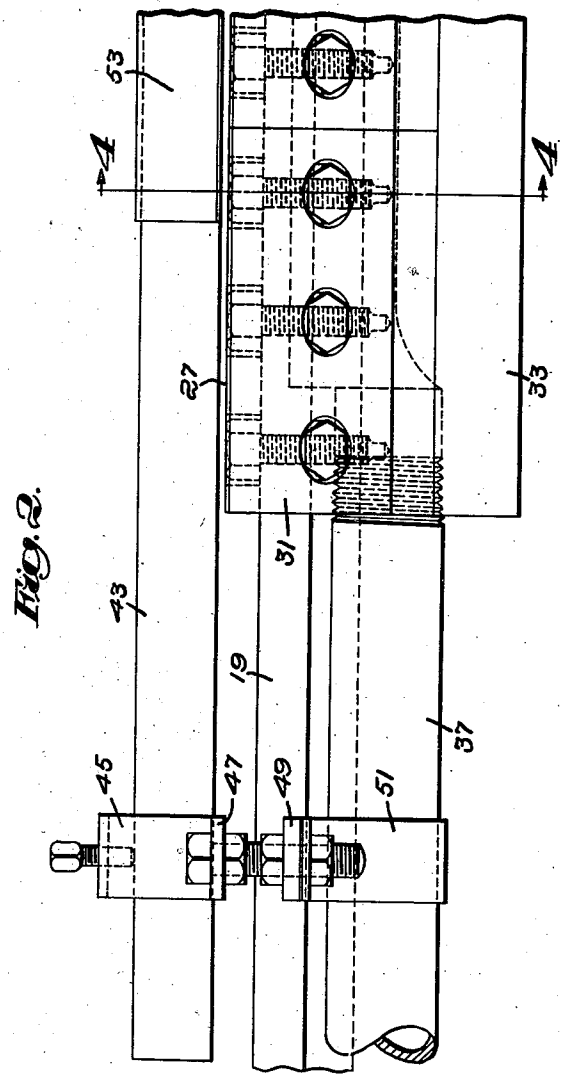


Fig. 2.

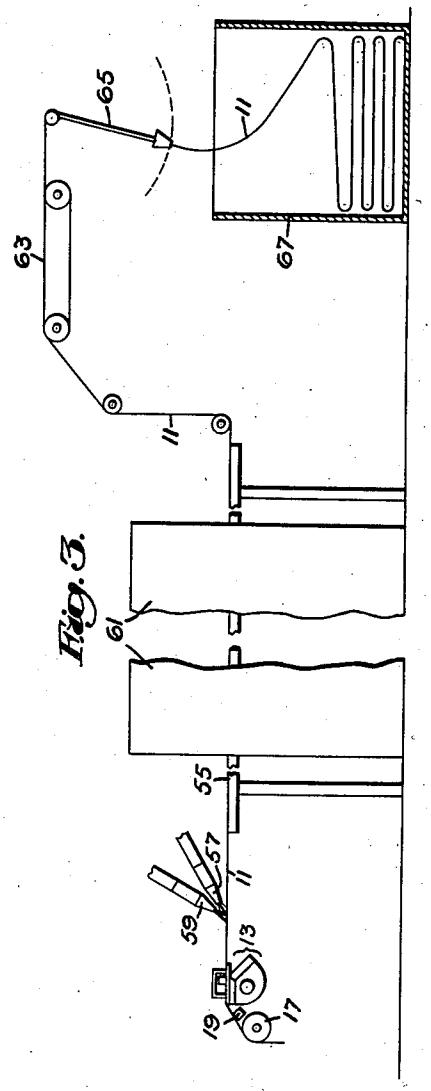


Fig. 3.

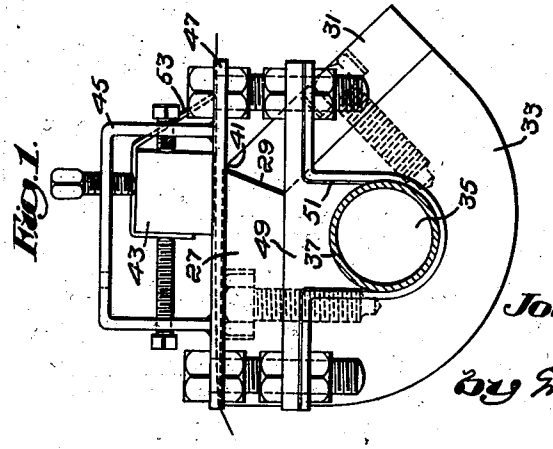


Fig. 1.

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Fig. 10.

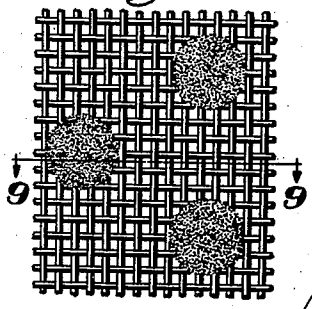


Fig. 4.

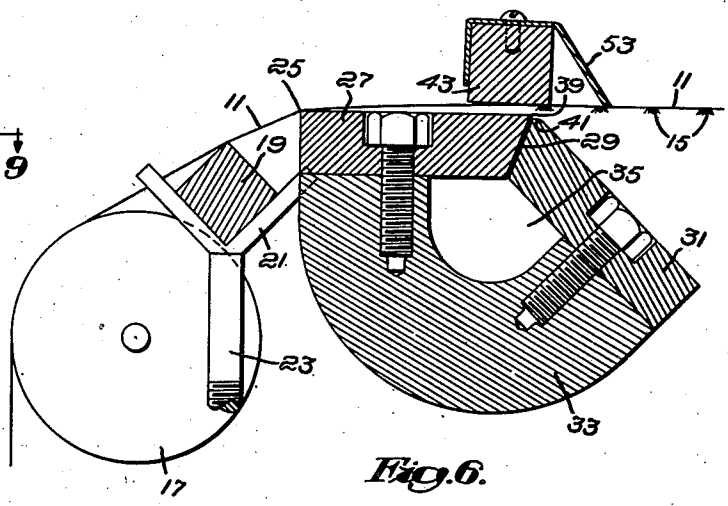


Fig. 5.

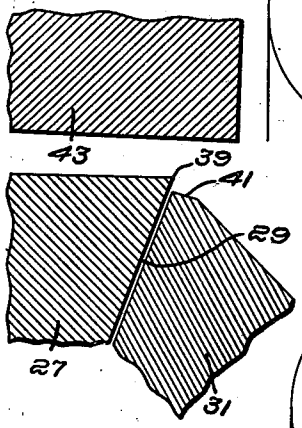


Fig. 6.

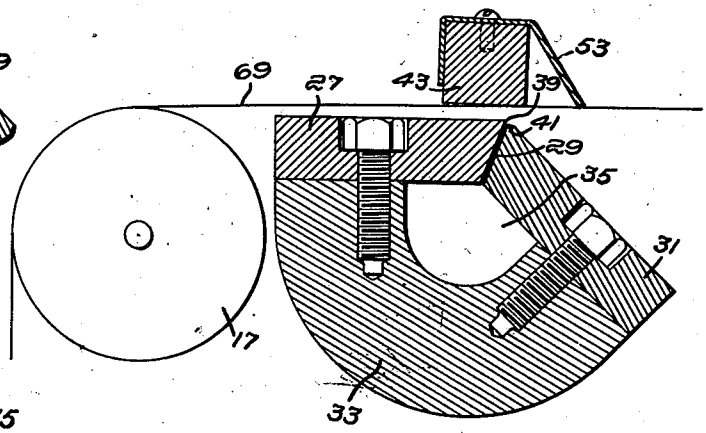


Fig. 7.

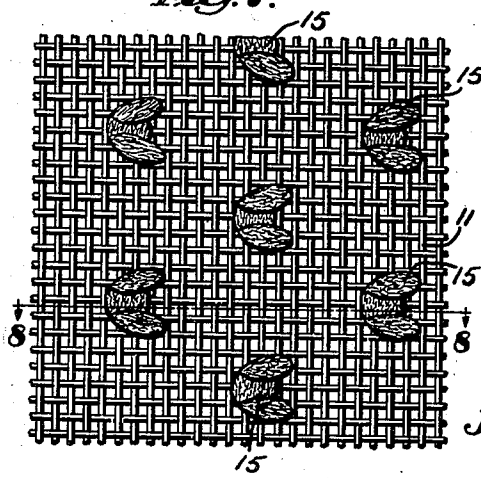


Fig. 8.

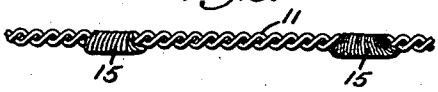
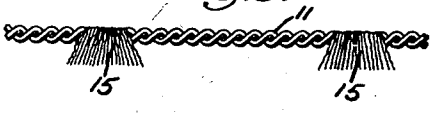


Fig. 9.



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Patented Mar. 1, 1938

2,110,118

UNITED STATES PATENT OFFICE

2,110,118

FABRIC AND METHOD OF AND APPARATUS FOR TREATING THE SAME

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Application September 14, 1936, Serial No. 100,604

15 Claims. (Cl. 26—29)

This invention relates to a new type of finished fabric and to methods of and apparatus for preparing the same, and particularly those fabrics presenting isolated or spaced groups of raised spots on a plain fabric ground, such, for example, as dotted marquisettes. Such spots are formed by interweaving yarns, picks or rovings with a plurality of threads of the warp or filling constituting the fabric ground, when and as the latter is woven, the rovings being subsequently sheared or clipped, leaving free, loose, exposed portions which lie flatwise on one face of the fabric. Such clipped spots may be in various patterns but are often in the form of so-called dots, on marquisettes, Swiss, lawn or other fabrics, where the weave of the ground fabric is more or less open.

It is one characteristic of an open mesh fabric, such as dotted marquisette, that the rovings being interwoven with a plurality of threads and having a sinuous path, the ends of the rovings when cut tend to lie flat against the open mesh face of the fabric ground, whereas in the ordinary closely woven pile fabric, where the pile threads have a single loop only about one or more threads, the pile threads when cut tend to assume a more nearly erect position.

When such fabrics leave the loom, the interwoven rovings appear as separate strands, ordinarily parallel, with loose ends closely bunched and lying flatwise against the fabric ground. Since they form a component, interwoven part of the fabric ground, they must be subjected, under the practice heretofore prevailing, to all the finishing operations to which the fabric itself is subjected. These, comprising, as they ordinarily have, the usual steps of bleaching, can drying, sizing, batching, etc., are such as militate against the development of any fluffed up, soft condition or shapely appearance of the roving ends. In the process of finishing these fabrics, as for example dotted marquisettes, as heretofore carried out, it has been the common practice before delivering them to the tenter frame to not only subject the fabric to such treatment as flattens and distorts the roving ends, but also to pass the fabric with the dots through starch or other sizing mangles for the purpose of imparting the required body to the fabric ground. The result has been that in the finished fabric the loose, roving ends become flattened, with the absence of any soft, fluffy appearance, and the dots as well as the fabric become permeated with size. On leaving the tenter frame when dried, the dots are flat, hard and irregular, the ends of the individual rovings are compacted and bunched leaving the interwoven strands more or less visible, and the dots present a shapeless and unsightly appearance in the finished fabric.

In connection with such fabrics, where the rovings are incorporated in the fabric ground when and as woven, one object of the present invention is to produce a fabric of this type in a finally finished form with the roving ends presenting a finely fluffed or puffed up full appearance, and a soft, downy condition extending over substantially the entire area covered by the dot or spot and over and above the interwoven roving strands, as contrasted with a flattened, irregular, unsightly and more or less shapeless appearance and a hard, matted condition, which has heretofore characterized finished marquisettes and other fabrics of this kind.

Another object of the present invention is to provide a highly efficient and simple method of and apparatus for treating fabrics, including the fluffing up of the loose fibers thereon and in particular loose roving ends on fabrics presenting such clipped spots as have been hereinbefore referred to.

These and other objects of the invention will be best understood by reference to the accompanying illustration of one specific embodiment thereof when taken in connection with the accompanying description, while its scope will be more particularly pointed out in the appended claims.

In the drawings:

Fig. 1 is an end elevation of a device embodyone form of the invention employing compressed air for the purpose of fluffing up the roving fibres on fabrics, and particularly the fibers of clipped spots such as have been referred to;

Fig. 2 is a partial front elevation of the device shown in Fig. 1;

Fig. 3 is a more or less diagrammatic illustration showing the general course of the fabric subjected to the action of the device shown in Figs. 1 and 2, followed by the application of sizing and its passage through the tenter frame;

Fig. 4 is a cross-sectional elevation of the device shown in Figs. 1 and 2, on the line 4—4 in Fig. 2, and additionally showing the path of the fabric immediately before and after being subjected to the action of the compressed air;

Fig. 5 is an enlarged fragmentary cross-sectional view showing the details of the plates which form the air discharge slot and the opposed cooperating buffer or seating member between which the cloth passes;

Fig. 6 is a cross-sectional view, similar to Fig. 4, showing the application of the device to an ordinary napped fabric;

Fig. 7 is an enlarged plan showing a portion of a dotted marquisette and showing the appearance of the dots before being fluffed up;

Fig. 8 is a cross-section on the line 8—8 in Fig. 7, illustrating the flattened condition of the dots before reaching the fluffing device;

Fig. 9 is a similar cross-section on the line 9—9 in Fig. 10 but illustrating the dots after having been subjected to the fluffing action; and

Fig. 10 is a plan view similar to Fig. 7, illustrating comparatively therewith the appearance of the dots after having been subjected to such fluffing action.

Referring to the drawings and first to the embodiment of the invention intended more particularly for the finishing of fabric having clipped spots, as, for example, marquisette, the fabric which is represented at 11 (Fig. 3), and before being subjected to the dot fluffing device represented generally at 13, is withdrawn from a box truck and subjected to the action of some of the usual finishing devices. It may, for example, be passed over a tension rack, thence through a drying mangle, thence over a series of drying cans, over compensating rolls, and through an intervening weft straightener. This is a common method of treating such fabrics, except that in the treatment here contemplated the usual application of sizing to the fabric is omitted, or rather withheld, until after the dots have been processed, as hereinafter described. This method of handling the fabric and the devices therefor being well understood, no attempt is made in Fig. 3 to show the treatment of the fabric just prior to reaching the dot raising device 13.

In the pre-treatment of the fabric, and particularly in its passage over the drying cans, the dots 15 become very much flattened and present a more or less matted and unsymmetrical appearance, which may be approximately represented in Figs. 7 and 8. To puff up the fibers of the dots and bring the latter into some such condition as is represented in Figs. 9 and 10, the fabric is first caused to pass over the guide roll 17 (Fig. 4), with the dotted side on which the loose roving ends lie (herein termed the "face" of the fabric in distinction from the reverse side) in contact with the roll, and thence over the corner or edge of a bar 19 which extends beneath the fabric for the full width thereof, and is supported at each opposite end by a yoke 21 carried by an upright bar 23. The corner of the bar 19 acts as a straight-edge, intending to separate more or less and loosen the packed down fibers of the dots prior to the action of the air thereon and to prepare them therefor. A somewhat similar added effect is produced by the drag of the fabric face (Fig. 4) over the corner 25 of the plate 27, the flat top of which lies along the line of travel of the fabric close to the face or underside thereof.

The fabric passing over the top of plate 27 is then subjected to the action of compressed air delivered against the face of the fabric through a narrow slot 29 formed between the opposite separated beveled edges of the plate 27 and the plate 31, the face of the latter being inclined to the face of the plate 27 and diverging from the path of the fabric 11.

The plates 27 and 31 (Figs. 1, 2 and 4) are bolted to a grooved casting 33 and with the latter form the air chamber 35, to either or both ends of which (Fig. 2) compressed air at a substantial pressure, such, for example, as from 20 to 30 pounds to the square inch, is delivered through the pipe 37 from any suitable source, the air being thence delivered upwardly through the narrow slot 29 between the edges of the separated plates 27 and 31 and against the face of the fabric 11 as it passes over the mouth of the slot. The slot 29 (shown in Figs. 1, 4 and 5) is preferably inclined forwardly at a somewhat acute angle in the direction of the travel of the fabric, so that the compressed air strikes the face of the fabric at a slight angle to the perpendicular, as, for example, 25°.

At the mouth of the slot, the slot forming side of the plate 27 extends to the top face thereof and forms an acute angle therewith, leaving a corner or edge 39 presented immediately to the face or under side of the fabric. The slot forming side of the plate 31, however, terminates short of the corner 39 (Fig. 5) by a slight amount (as, for example, $\frac{1}{16}$ of an inch), and the wall of the slot is thence beveled back to the face of the plate, forming a shoulder 41 further spaced from the plane of travel of the fabric than the edge 39. This forms an open relief space just beyond the corner 39 where the air impinges on the face of the fabric and on the free fibers of the dots and avoids confining the fibers of the dots when and after subjected to the compressed air, as well as providing the desired turbulence of the air acting on the loose fibers.

The structure comprising the plates 27 and 31 and the casting 33 (of which one end only is shown in Fig. 3), extends transversely across and beneath the entire width of the fabric so that the face of the latter for its entire width is subjected to the blast of air delivered through the narrow slot 29. The slot 29 is preferably narrow in width so as to deliver from its mouth a thin sheet of compressed air against the face of the fabric, a width of the order of approximately .014 of an inch, with an air pressure of from 20 to 30 pounds being found to give effective results.

Immediately above the plate 27, separated from the plate by an appreciable space (as, for example, $\frac{1}{16}$ of an inch) and extending forwardly and beyond the mouth of the slot by an appreciable distance (as, for example, ¼ of an inch) is located a member 43, herein in the form of a bar of substantially square cross-section, the bottom of which, and particularly the overlapping forward edge thereof, presents a surface functioning both as a seat for the back of the fabric when and if forced upwardly by the air and to direct the escaped air through the most effective course.

The bar 43 is supported at each end (Figs. 1 and 2), beyond the ends of the plates 27 and 31, by adjusting screws in a U-shaped plate 45, the legs of which are secured to a transverse plate 47, fastened in turn by adjusting screws in spaced relation to a bracket 49 resting on the pipe 37, the bracket being clamped to the pipe by a U-shaped band 51 which embraces the under side of the pipe. The bar therefore extends entirely across and above the back of the fabric, slightly spaced from the mouth of the air slot 29, and in the relation thereto heretofore described.

Beyond the bar 43 and the mouth of the air slot, above the fabric as it passes beyond the slot, there is provided a member 53 consisting of a sheet metal plate fastened to the bar and having a wall inclined forwardly and downwardly from the top of the bar nearly to the plane of fabric travel. This plate extends across the entire width

of the fabric, covering the space back of the fabric just beyond the mouth of the slot. This plate confines the air escaping through the fabric and also serves to deflect it again downwardly through the fabric from the back thereof, and the forward lower edge of the plate **53** serves to seat or hold down the fabric if the latter tends to lift under the action of the air.

The best results have been found to follow an adjustment of the bar **43** and deflector **53**, such that the seat or surface formed by the bottom of the bar is inclined downwardly and forwardly towards the plate **27** at a slight angle (as, for example, 2°) as is indicated in Figs. 4 and 5, thus providing slightly converging walls with a slightly contracting space for the passage of the fabric between them.

The dimensional figures herein suggested are not to be taken in any restrictive sense but as illustrative only, and merely as exemplifying those utilized in the preferred embodiment of the invention applied to the processing of fabrics, such as small dotted marquisettes. These dimensions may be varied widely and variations may be required to adapt the device to fabrics of other types.

The process of treating the described fabric is as follows:

After the earlier described pre-treatment of the fabric, and on leaving the roll **17**, the face of the fabric **11** encounters the corner of the bar **19** and subsequently the corner **25** of the plate **27** which act to loosen and separate the loose fibers of the dots and to comb them backward. The fabric then passes over and above the face of the plate **27** and as it emerges from above the corner **39**, any area of the face of the fabric occupied by a dot is subjected to the action of the compressed air delivered against the dot at a forward inclination to the face of the fabric through the mouth of the narrow inclined slot **29**. This, through cooperation with the overlapping seat on the bar **43**, causes the fibers of the dot to be puffed or fluffed up into the underlying relief space provided by the spaced beveled shoulder **41** on the plate **31**. This puffing or fluffing appears to be increased by the reaction of the air as the dot passes beneath the space covered by the deflecting plate **53**.

The position assumed by the fabric passing over the plates **27** and slot **29** and beneath the bar **43** and deflector **53** is indicated in Fig. 4. Under these conditions the relationship of the overlapping seat of the bar to the mouth of the slot and to the recess formed by the beveled shoulder **41**, particularly in conjunction with the deflector **53**, creates a highly desirable turbulence in the air at the point where it strikes the dot, causing the air to impinge thereagainst at varying angles, raising and fluffing up the roving fibers over the entire area of the dot and avoiding the flattening or distortion of any portion thereof, such as might be caused by impingement directly of the thin sheet of compressed air against the dot without the creation of such turbulence.

The action of the impinging air not only imparts a puffed or fluffed up appearance over the entire area of the dot, but serves to partially dry the fibers thereof, so that the fabric emerges from beyond the space covered by the deflector **53** with the dots in a thoroughly fluffy and partially dried state.

The fabric then passes to the tenter frame **55** (Fig. 3), but before entering the frame is subjected to a sizing action, the size, however, being applied to the back of the fabric so as not to reach the raised fibers of the dots or affect the fluffed up appearance thereof. The size may be applied in any well known manner, but herein a transverse series of size delivery nozzles **57** is employed to apply starch or other suitable size fed from any desired source, each nozzle being arranged in conjunction with an immediately adjacent aspirating air delivery nozzle **59**, supplied with compressed air from any suitable source, to deliver against the back of the fabric a finely atomized spray of sizing.

The sized fabric then passes into and through the tenter frame **55** which serves to restore its width, and on the tenter frame enters and passes through the heating chamber **61** which thoroughly dries the fabric, while leaving the fluffy condition of the dots unimpaired. From the tenter frame the fabric passes over the conveyor **63** to any suitable plaiting or hooker device **65**, by which it is laid in plaits or folds in the box **67** so as to leave the dots without impairment of their fluffed up condition.

The finally finished fabric is characterized by a plain, sized, fabric ground with a more or less open weave, with the rovings initially interwoven with threads of the fabric ground and with the loose, unsized, roving ends fluffed up in a soft, downy condition spreading substantially over all the area occupied by the spot, including the interwoven portions of the roving, and giving the intended shape (herein circular) to the dot or spot.

In Fig. 6 there is shown the application of one form of the invention for the treatment of the nap or pile of other fabrics, such as shoe ducks, where the nap extends continuously over the face of the fabric, or of other fabrics having a napped surface of any kind.

In this device, the roll **17** is raised slightly so that the plane of travel of the fabric **69** is slightly above the face of the plate **27**, the bar **19** being omitted. The bar **43** is also raised very slightly, as compared with its position in Fig. 4, to allow for the passage of large seams. The functioning of the air in turbulent flow and the parts associated with the air slot, however, is substantially the same as in the case of the device shown in Fig. 4.

This process and apparatus have been found not only effective in fluffing up the nap on fabrics where the nap has become matted and pressed down by the usual preceding finishing treatment, but also to materially improve the brilliancy of color in dyed piled or napped fabrics where the color has been dulled by loose particles of fiber or lint previously deposited by the napping process.

While there is herein shown and described for the purposes of illustration one specific embodiment of the invention, it is to be understood that extensive deviations and changes may be made in the form, dimensions and relative arrangement of parts, all without departing from the spirit of the invention.

We claim:

1. An apparatus for treating the nap, on pile or sheared fabrics, comprising a structure having a narrow air discharge slot, means for causing travel of the fabric across and in front of the mouth of the slot with its napped face presented thereto, means for supplying compressed air at an acute angle to the direction of travel of the fabric, the side of the structure forming the mouth of the slot on the advance side of

the fabric being farther spaced from the path of travel of the fabric than the side of the structure forming the opposite side thereof, a member on the opposite side of the fabric from the slot in close proximity to the slot and presenting a surface extending across and beyond the area of the fabric aligned with the slot, and air deflecting means beyond said member also on the opposite side of the fabric from said slot.

2. An apparatus for treating the nap on pile or sheared fabrics, comprising a structure having a narrow air delivery slot, means for causing travel of the fabric across and in front of the mouth of the slot with its napped face presented thereto, means for supplying compressed air at an acute angle to the direction of travel of the fabric, the side of the structure forming the mouth of the slot on the advance side of the fabric being farther spaced from the path of travel of the fabric than the side of the structure forming the opposite side thereof, and a member on the opposite side of the fabric from the slot in close proximity to the back of the fabric and presenting a surface extending across and beyond the area of the fabric aligned with the slot.

3. An apparatus for treating the nap on pile or sheared fabrics, comprising a structure having a narrow air discharge slot, means for causing the travel of the fabric across and in front of the mouth of the slot with its napped face presented thereto, and means for supplying compressed air for delivery through the slot, said slot being inclined at an acute angle in the direction of travel of the fabric and the side of the structure forming the mouth of the slot on the advance side of the fabric being farther spaced from the path of travel of the fabric than the side of the structure forming the opposite side thereof.

4. An apparatus for treating the nap on pile or sheared fabrics, comprising a structure for discharging compressed air and having a narrow air discharge slot, a member presenting a surface one edge of which forms one side of the mouth of said slot, means for causing the travel of the fabric across said member and the mouth of said slot with its napped face presented thereto, means for supplying compressed air for discharge from said slot toward said fabric, and a member on the opposite side of said fabric presenting a second surface spaced from said first surface in close proximity to the back of the fabric and extending across the mouth of the slot, said first and said second surfaces being inclined toward each other in the direction of travel of the fabric to provide a progressively contracting space for the passage of the fabric between them.

5. An apparatus for treating the nap on pile or other sheared fabrics, comprising means for causing the continuous travel of the fabric, a structure positioned adjacent the path of fabric travel having a narrow discharge slot extending substantially the full width of the fabric, means for discharging compressed gas through said slot toward and against the napped face of the traveling fabric to create a turbulent gas condition thereat at points where said nap is otherwise undisturbed and free to fluff up under the action of the gas, a backing member on the opposite side of the fabric from said slot in close approximation to the fabric and restraining the fabric against the action of the gas, said backing member terminating shortly beyond the region of the direct impingement of the gas on the fabric, and means beyond said backing member also closely adjacent the back of the fabric for reversely deflecting the gas.

6. An apparatus for treating the nap on pile or other sheared fabrics, comprising means for causing the continuous travel of the fabric, a structure positioned adjacent the path of fabric travel having a narrow discharge slot extending substantially the full width of the fabric, means for discharging compressed gas through said slot toward and against the napped face of the traveling fabric to create a turbulent gas condition thereat at points where said nap is otherwise undisturbed and free to fluff up under the action of the gas, and a backing member on the opposite side of the fabric from said slot in close approximation to the fabric localized at or adjacent the area of the fabric against which the gas impinges and restraining the fabric against the action of the gas.

7. The method of finishing fabrics, which consists in providing a fabric having a plain fabric ground with raised spots formed on the face thereof by rovings interwoven with threads comprising the said ground, causing the continuous travel of such fabric in partly finished but unsized condition, acting frictionally on the matted fibers of the loose roving ends to separate the same, creating a turbulent air condition by directing compressed air forcibly against the face of the fabric to fluff up said roving ends, applying size to the back only of said fabric, and drying the fabric without impairing the fluffed up condition of said roving ends.

8. The method of finishing fabrics, which consists in providing a fabric having a plain fabric ground with raised spots formed on the face thereof by rovings interwoven with threads comprising the said ground, causing the continuous travel of such fabric in partly finished but unsized condition, creating a turbulent air condition by directing compressed air forcibly against the face of the fabric to fluff up the loose roving ends, thereafter applying size to the back only of said fabric, leaving the roving ends unsized and in their air fluffed up condition, and thereafter drying the fabric without impairing the air fluffed up condition of said roving ends.

9. The method of finishing fabrics, which consists in providing a fabric having a plain fabric ground with raised spots formed on the face thereof by rovings interwoven with threads comprising the said ground, causing the continuous travel of the fabric in partly finished condition, directing compressed gas forcibly against the face of the fabric to create a turbulent gas condition about said roving ends at points where the latter are otherwise undisturbed, to fluff up said roving ends under the action of the gas, applying size to the back only of said fabric leaving the roving ends unsized and in their fluffed up condition, and completing the finishing of the traveling fabric without impairment of the fluffed up condition of said roving ends.

10. An apparatus for fluffing up the loose roving ends on fabrics presenting raised spots on the face thereof, comprising means for causing the continuous travel of the fabric in partly finished form, a structure positioned adjacent the path of the fabric travel, means on said structure for discharging compressed gas toward and against that face of the traveling fabric presenting said spots for substantially the full width thereof, said gas being so directed

as to create a turbulent gas condition on said face of the fabric at points where the roving ends of the spots are otherwise undisturbed and free to fluff up under the action of the gas, means for applying size to the back of the fabric ground only, leaving the roving ends of the spots unsized, and devices for subsequently acting on the traveling fabric to further finish the latter without impairment of the fluffed up condition of the roving ends.

11. An apparatus for fluffing up the loose roving ends on fabrics presenting raised spots on the face thereof, comprising means for causing the continuous travel of the fabric in partly finished but unsized condition, means frictionally engaging the matted fibers of the loose ends of the roving forming said spots to separate the fibers thereof, means at a relatively advanced point in the travel of the fabric for thereafter fluffing up the roving ends by directing gas under pressure toward and against the face of the fabric bearing said spots where the fibers thereof are otherwise undisturbed and free to fluff up under the action of the gas, means at a still further advanced point in the travel of the fabric for sizing the back of the fabric only, leaving the gas fluffed up condition of the spots unimpaired, and means thereafter, while the fabric is still traveling, for stretching and drying the latter without impairment of the gas fluffed up condition of the roving ends.

12. The method of finishing fabrics having a plain open mesh woven fabric ground with a plurality of spaced spots formed on one face thereof by rovings of textile material interwoven with a plurality of threads comprising said fabric ground as and when the fabric is initially woven and presenting a plurality of loose ends of said rovings on said fabric face, which consists in separating and fluffing up the roving fibers of a plurality of spots over substantially the entire area of each spot, as by the turbulent action of an air blast directed against the face of said spots, so that said roving fibers of said plurality of spaced spots are fluffed up and given an unflattened and generally upstanding, unmatted attitude above said fabric ground, and sizing the fabric ground while leaving the roving ends unsized.

13. A method of finishing fabrics, which consists in taking a fabric of the marquisette type having a plain open mesh fabric ground with raised, spaced spots formed on the face thereof by rovings interwoven each with a plurality of threads comprising said fabric ground as and when said fabric is initially woven and having the loose ends of said rovings lying flatwise and matted against the ground, subjecting said fabric to partial finishing operations, causing the continuous travel of such fabric, forcibly acting on the fibers of the rovings from both the face and reverse sides of the fabric without damage through such action to the fabric ground adjacent said spots, to separate and raise the flattened and matted roving fibers and impart to said roving ends a fluffed-up soft condition extending over the area of each spot so that the loose roving fibers of said spaced spots are fluffed up and given an unflattened and generally upstanding, unmatted attitude above said fabric ground, finishing the fabric while leaving the loose roving ends unsized and without impairment to the fluffed-up condition thereof.

14. As a new article of manufacture, a finished woven textile fabric having a plain open mesh fabric ground with rovings of a textile material interwoven each with a plurality of threads comprised in said ground as and when said fabric is initially woven, said rovings forming raised spots over spaced areas on the face of the fabric ground and so arranged that the loose ends of said rovings are exposed on said face, said roving ends being in fluffed up soft condition over substantially the entire area of each spot with the fibers constituting said roving ends in substantial separation from each other and unmatted and having an unflattened and generally upstanding attitude above said fabric ground, the fabric ground being sized and the fluffed up roving ends being unsized.

15. As a new article of manufacture, a finished woven textile marquisette fabric having a plain open mesh fabric ground with rovings of a textile material interwoven each with a plurality of threads comprised in said ground as and when said fabric is initially woven, said rovings forming raised spots over spaced areas on the face of the fabric ground and so arranged that the loose ends of said rovings are exposed on said face, said roving ends being in fluffed up soft condition over substantially the entire area of each spot with the fibers constituting said roving ends in substantial separation from each other and unmatted and having an unflattened and generally upstanding attitude above said fabric ground, the fabric ground being sized and the fluffed up roving ends being unsized.

JOHN DOUGLAS ROBERTSON.
WILLIAM G. STAPLES.

DISCLAIMER

2,110,118.—*John Douglas Robertson* and *William G. Staples*, Dighton, Mass. FABRIC AND METHOD OF AND APPARATUS FOR TREATING THE SAME. Patent dated March 1, 1938. Disclaimer filed September 3, 1943, by the assignee, *Mount Hope Finishing Company*.

Hereby enters this disclaimer to claims 7 through 15 inclusive, of said patent.

[*Official Gazette September 28, 1943.*]