

April 20, 1943.

M. A. STYBR

2,316,818

WOVEN METALLIC WOOL FABRIC

Original Filed April 15, 1936

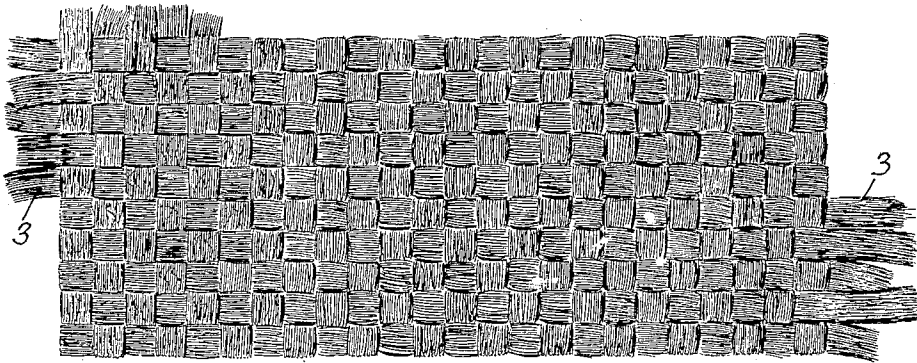


Fig. 1

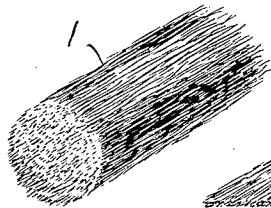


Fig. 4

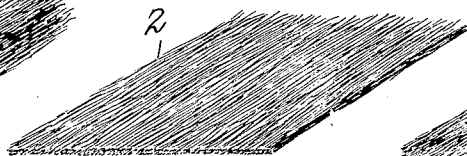


Fig. 5

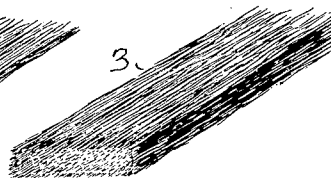


Fig. 6

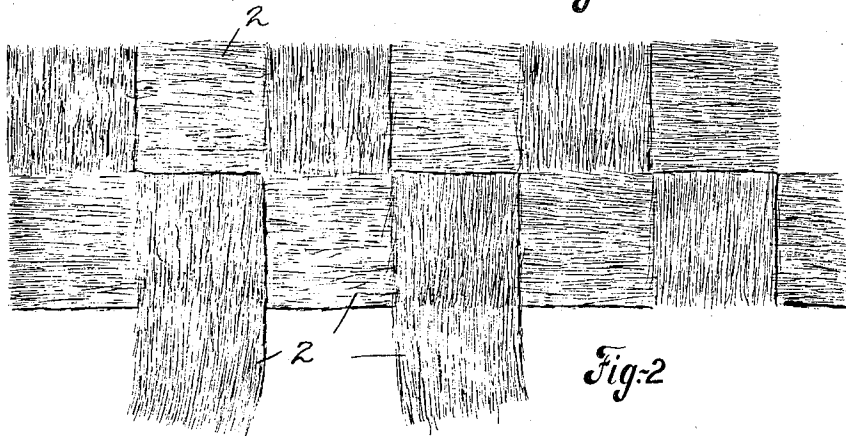


Fig. 2

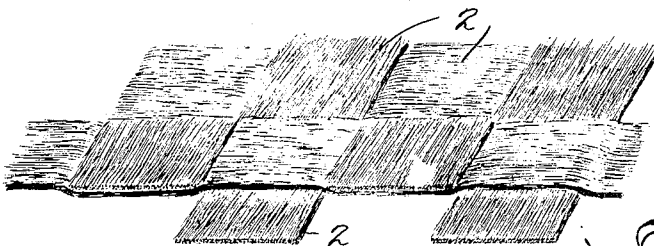


Fig. 3

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UNITED STATES PATENT OFFICE

2,316,818

WOVEN METALLIC WOOL FABRIC

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Continuation of application Serial No. 74,494,
April 15, 1936. This application April 10, 1940,
Serial No. 328,930

12 Claims. (Cl. 139—425)

This invention relates to woven fabrics, and more particularly to a metallic wool fabric wherein loose, untwisted rovings of metallic wool are interwoven or intertwined with each other or with other strands to form a flat fabric of substantially uniform thickness.

Heretofore it has been proposed to weave fabric from metallic wool by spinning the metallic fibers or filaments into a twisted yarn which in turn was to be woven into a cloth. Such woven fabric wherein the strands comprised bundles of individual wires twisted into a cord is disclosed in United States patent to Sweetland, 1,147,279, while United States Patent to Underwood, 1,012,131 and British Patent 372,274—1930 disclose fabrics woven from yarn spun from metallic wool fibers or filaments.

Applicant's fabric, forming the subject matter hereof, differs characteristically from these prior art disclosures by employing unspun and untwisted rovings of metallic wool wherein the filaments, which are of irregular cross-sectional area and have irregular surfaces of such nature that they become interfelted on contact, are gathered together in longitudinally disposed approximately parallel relation. The nearest approach to applicant's fabric to be found in the prior art is probably that disclosed, but not claimed, in United States patent to Rossman, 1,975,407, the filing date of the application for which is antedated by the actual construction of metallic fabric as herein shown and described. The present application is a continuation of application Serial No. 74,494, filed April 15, 1936.

Being loose and untwisted, the rovings of the present fabric may be spread out laterally into relatively wide thin ribbon-like formation, or they may be gathered together in a thicker, narrower arrangement as conditions of use of the resulting fabric may require.

The object of the invention is the production of a metallic fabric which will have a relatively smooth even surface and be of uniform thickness.

A further object of the invention is to provide a metallic wool fabric wherein the rovings may be relatively wide as compared with their thickness.

A further object of the invention is to provide a woven metallic fabric which will be of pleasing appearance, possess considerable strength and relatively great durability, and which may be economically manufactured.

A further object of the invention is to provide a metallic fabric which will be of substantially uniform density throughout.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and the mode of operation, or their equivalents, as hereinafter described or illustrated in the accompanying drawing.

Referring to the accompanying drawing, wherein is shown the preferred but obviously not necessarily the only form of embodiment of the invention,

Fig. 1 is a plan view of a portion of metallic fabric embodying the present invention.

Fig. 2 is a similar plan view illustrating the use of ribbon-like rovings of greater width.

Fig. 3 is a perspective marginal view illustrating more clearly the multiple strata character of the fabric.

Fig. 4 is a perspective view of a loose bundle of fibers or filaments as they come from the metallic wool machine.

Fig. 5 illustrates the metallic wool fiber distributed into a relatively wide, thin, ribbon-like roving preparatory to being woven into fabric.

Fig. 6 is a similar view showing a roving of greater thickness but less width.

Like parts are indicated by similar characters of reference throughout the several views.

Instead of producing a tangled disorganized mass of material, recent types of metallic wool apparatus deliver long continuous filaments, which, being loosely collected together form multiple cutters, form rovings or ropes wherein the fibers or filaments extend longitudinally in substantially parallel relation. It will be understood that there will be some mixing and crossing of the strands, but that the general direction thereof is longitudinally of the roving. Metallic wool is produced in a wide variety of sizes or degrees of fineness. The relative size or coarseness of the material, as well as the number of filaments or strands, determines the transverse size of such rovings.

Whereas it has heretofore been proposed to spin such material into hard twisted yarn or cords preparatory to weaving, in the present instance the rovings are interwoven without spinning. The strands being loosely gathered together, except for such interlocking and adhesion of the approximately parallel strands with each other, the strands or filaments may be laterally distributed, thus forming each roving into a relatively wide, thin ribbon of material. The extent of distribution of the strands and resulting width

and thickness of the roving will depend upon the purpose for which the material is to be used and the desired thickness of the fabric.

In Fig. 1 there is illustrated a fabric utilizing a relatively small roving, while Fig. 2 shows the use of wide, thin ribbons of material. In practice, relatively thin ribbon-like rovings having a width of approximately three inches have been quite successfully used. However, for ordinary use, ribbons or rovings of less width will be more commonly used.

In the drawing, 1 represents the roving or rope as it comes from the metallic wool apparatus in a loose, generally round bundle. Before weaving, the roving is laterally distended by redistribution of the strands into thin, broad, ribbon-like formation 2. In such reformed relation the ribbon type roving 2 is preferably, although not necessarily, flattened or pressed by being passed between pressure rollers. Instead of being reformed thin and wide, the roving 1 may be thicker and of less width, as illustrated at 3.

The roving in a round form as at 1, or more or less flattened as at 2 or 3, may be woven into a fabric of more or less intricate or fancy pattern or design. However, for illustrative purpose, but with no desire to unduly limit the scope or application of the invention, the material is shown in Figs. 1, 2, and 3 woven into a very simple assembly of basket weave pattern.

In such fabric, the ribbon-like rovings 2 are used as both warp and woof. The rovings are arranged in transverse relation in an "over and under" style. Such fabrication affords superposed layers or strata. The individual strands or filaments of the respective layers or strata are angularly disposed. While the layers of material are continuous, their relation is reversed at spaced intervals. The under strata becomes the uppermost, and vice versa. Whereas fabric woven from spun or twisted yarn or cords possesses alternating hard, dense striations and interstices whereby the density or porosity is ununiform and the surface hard and corrugated, the present method affords a relatively soft fabric wherein the evenly distributed strands or filaments disposed in transverse relation in superposed layers afford a fabric of uniform density and flexibility, having a uniform surface. Fabric may be produced in various widths and any desired length. The completed fabric may be cut into portions of any suitable size and shape, according to its intended use.

The woven metallic fabric has a wide field of usefulness. For example, due to its uniform density, such material is usable as a filter or strainer cloth. It is also a desirable cover sheet for pressing machine pads. As padding material for ironing machine rolls, it may be wound upon the rolls until an accumulation of sufficient thickness is had. It retains its resiliency after long periods of use and does not deteriorate under influence of heat and moisture, as do non-metallic fabrics. Likewise, it possesses greater strength and durability than other fabrics. Such examples of use are rarely illustrative and many other applications will readily occur to anyone using such material.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the

principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described my invention, I claim:

1. A metallic wool fabric comprising transversely disposed flat thin relatively wide interwoven ribbons of metallic wool material, the construction and arrangement being such as to form a substantially uniform exposed plane surface, and wherein the superposed contacting surfaces of transversely arranged ribbons of metallic wool material become interfelted with each other.

2. A metallic wool fabric comprising transversely disposed flat thin relatively wide ribbons of interfelted fibers of metallic wool material interlaced lengthwise and crosswise and forming warp and woof strands of a basket weave fabric having a substantially uniform plane surface.

3. A metallic wool fabric comprising transversely interlaced flat thin relatively wide ribbons of metallic wool material consisting of relatively long loosely disposed intertangled metallic fibers extending lengthwise of the ribbons, the construction and arrangement being such that the transversely superposed portions of the warp and woof ribbons are deflected and embedded one in another to afford a substantially uninterrupted uniform plane surface.

4. A metallic wool fabric of the character described, characterized by flat thin relatively wide ribbons of loosely disposed substantially parallel fibers of metallic wool material interlaced lengthwise and crosswise to form the warp and woof of a basket weave design fabric having a plane surface.

5. A metallic wool fabric, characterized by relatively thin wide flat ribbons of loosely arranged fibers of metallic wool material extending longitudinally of the ribbons interconnected with each other into sheet formation, the construction and arrangement being such as to form a fabric having a uniform uninterrupted plane surface wherein contiguous surfaces of contacting ribbons interfelt with each other into a unitary structure.

6. A metallic wool fabric comprising superposed layers of metallic wool material, each layer consisting of metallic wool fibers arranged in substantially parallel relation and interlaced with like material of the contiguous layer to afford warp and woof elements of a plait-weave fabric, the construction and arrangement being such that the warp and woof material interfelt with each other into a continuous unitary assembly having a substantially uniform even exposed surface.

7. A metallic wool fabric comprising transversely interwoven flat strands of untwisted metallic wool fibers arranged in substantially parallel relation and intertangled with each other and forming warp and woof strands of the resulting fabric the contiguous contacting faces of which are interfelted with each other, the construction and arrangement being such as to afford a continuous uniform sheet material of combined woven and felted character having a substantially uniform even surface.

8. The herein described method of making metallic wool fabric, including the steps of flattening and compressing rovings of substantially parallel untwisted metallic fibers extending longitudinally of the rovings into flat ribbons wherein the individual fibers are intertangled and matted with each other into united relation, interweaving the flat ribbons of compressed intertangled metallic fibers with each other, causing the contacting faces of interwoven ribbons of material to become interfelted into a continuous unitary sheet formation, the resulting arrangement and assembly being such as to afford a fabric having a substantially even surface of uniform density.

9. A metallic wool fabric comprising a succession of interconnected areas of superposed flat layers of non-twisted substantially parallel intertangled metallic fibers, with the fibers of one layer extending at an angle to those of a contiguous layer and interfelted therewith, layers of succeeding areas being continuous but disposed in reverse relation to each other and forming a plane surface.

10. A metallic wool fabric comprising a plurality of superposed strata of non-twisted metallic wool fibers arranged and compressed into flat thin relatively wide assemblies wherein the component fibers are substantially longitudinally dis-

posed in approximately parallel relation and intertangled with each other, the disposition of the superposed strata being reversed in succeeding areas of the resulting fabric and interfelted with each other and forming a substantially plane surface.

11. A metallic wool fabric having a substantially plane surface comprising superposed thin flat ribbons of non-twisted metallic wool material the fibers of which are disposed in substantially parallel relation longitudinally of the ribbons and intertangled with each other, the superposed ribbons of metallic wool material being arranged with their respective fibers transversely disposed and interfelted with those of a contiguous ribbon.

12. A metallic wool fabric having a substantially plane surface comprising superposed initially relatively thin flat layers of nontwisted metallic wool material the fibers of which are disposed in substantially parallel relation and intertangled with each other into a unitary assembly, the superposed layers being relatively disposed in transverse contacting relation wherein the fibers of the respective layers become interfelted with each other into a sheet-like fabric having a substantially even uniform surface and of substantially uniform density.

MILES A. STYBR.

CERTIFICATE OF CORRECTION.

Patent No. 2,316,818.

April 20, 1943.

MILES A. STYBR.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, second column, line 33, for "form" read --from--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 15th day of June, A. D. 1943.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.