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LOUDSPEAKER SCREEN AND PROCESS FOR MAKING SAME

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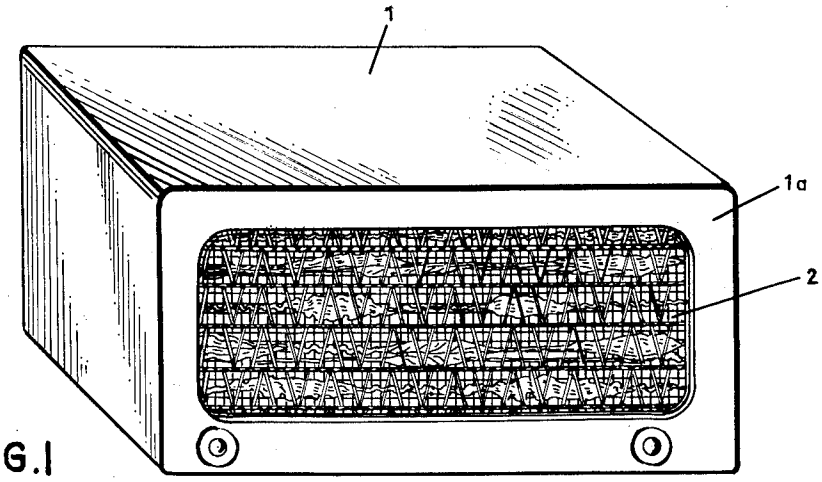


FIG. 1

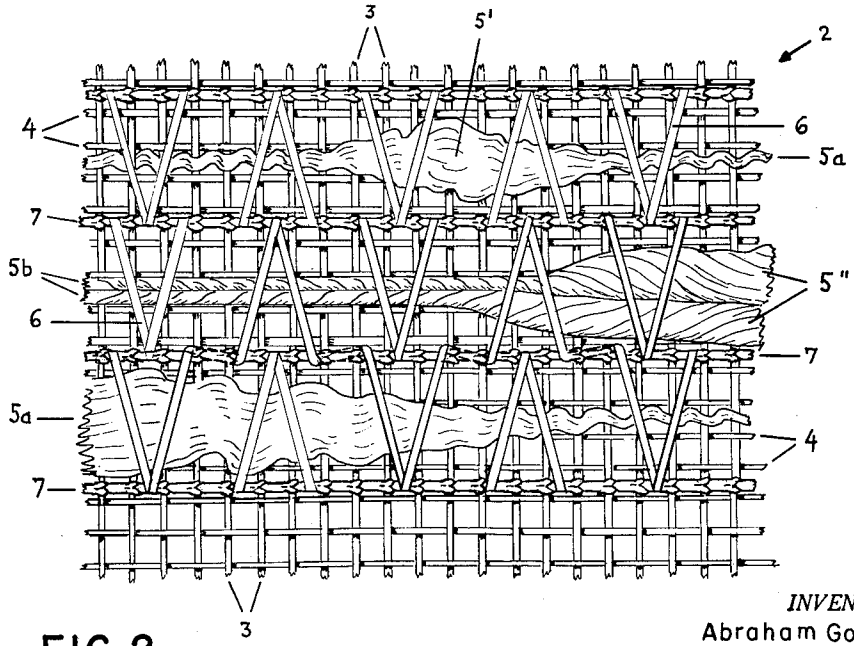


FIG. 2

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LOUDSPEAKER SCREEN AND PROCESS FOR MAKING SAME

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My present invention relates to loudspeaker screens or grilles, adapted particularly for use with high-fidelity equipment, as well as to a process for making same.

In radio receivers, self-contained loudspeaker enclosures and similar sound-producing apparatus, woven fabrics are widely used as a sound-transmissive yet dust-retaining covering. One of the inherent disadvantages of such fabrics, if made of flaccid textiles, is their sagging which is particularly noticeable on large loudspeaker surfaces.

The above drawback has recently been overcome by the introduction of coarsely woven, wide-mesh webs, known as scrim, made from resin-coated fibers. These fabrics, however, bring forth another, even more serious disadvantage, namely unwanted vibrations excited by the acoustic oscillations of the loudspeaker system. Such forced vibrations may be very feeble and hardly noticeable by direct observation but will nevertheless introduce objectionable resonances into music or speech transmission, the effect being rather disturbing to the ear when a high degree of fidelity is aimed at.

It is an object of the present invention to produce an improved loudspeaker fabric of the non-sagging type which is free from parasitic vibrations in the audible frequency range.

It is another object of the invention to provide a simple and convenient process for producing a weighted fabric adapted to be used as a loudspeaker screen.

An important feature of the invention resides in the provision of a loudspeaker covering comprising weighting threads interwoven with or otherwise applied to a non-sagging scrim of resin-treated fibers so as to produce a mechanical damping effect which prevents the buildup of objectionable vibrations in the fabric. For best results, the weighting threads may include filaments of a variety of materials and be distributed in more or less random fashion, preferably in such manner as to form nodules, or zones of greater density, at spaced locations on the scrim. The different filaments may be of synthetic or natural organic textile material or formed by metallic tinsel, preferably of a contrasting color to give an incidental ornamental effect.

According to another feature of the invention, a series of relatively thin light-weight filaments are applied to the fabric so as to extend generally transversely across the weighting threads and to anchor them in position, these filaments being in turn held down by still other, flexible threads forming rows of lock stitches parallel to the weighting threads.

The invention will be described in greater detail with reference to the accompanying drawing in which:

FIG. 1 is a perspective front view of a radio receiver (or a loudspeaker enclosure) having a fabric embodying the invention applied thereto; and

FIG. 2 is a view of the fabric on an enlarged scale.

In FIG. 1, the receiver **1** is shown with the screen **2** applied to the loudspeaker opening. The fabric is secured, in a manner well known in the art, by gluing it from within to the frame **1***a* of the receiver.

In FIG. 2, the texture of the screen **2** is shown in detail. Basically it is a relatively light-weight, open-

weave fabric or scrim composed of orthogonally intersecting woof threads **3** and warp threads **4** of relatively rigid filaments such as resin-coated textile fibers.

Parallel to the warp threads **4**, a number of relatively heavy parallel weighting threads *5a* and *5b* are spacedly superimposed on the scrim; threads *5a* are loose, wavy cotton filaments while threads *5b* are pairs of individually twisted strands. These weighting threads *5a*, *5b*, which are inherently more flexible than the coated fibers **3**, **4** and as shown are considerably thicker than the latter, are made denser or enlarged at intervals to form randomly spaced nodules *5'*, *5''*. For ornamental reasons, the weighting threads may have lighter or darker colors contrasting with that of the scrim.

After every fourth warp thread, and parallel therewith, threads of flexible material (e.g. silk) form a row of lock stitches **7** interlinking with the woof threads **3**. The stitches **7** are so applied to the scrim as to engage filaments **6** of metallic tinsel, lighter than the weighting threads *5a*, *5b*, running in U-shape between successive rows **7**. In the particular embodiment illustrated, each filament **6** runs in warp direction and forms V's pointing in alternate directions between two adjoining pairs of rows **7** so as to pass back and forth across the groups of warp threads therebetween. These V's, in turn, serve to hold in place both sets of weighting threads *5a* and *5b*. From FIG. 1 it will be noted that the array of spaced-apart weighting threads, secured to the web **3**, **4** by the holding threads **6**, extends over substantially the entire face of this web.

My invention is, of course, not limited to the specific embodiment described and illustrated but may be realized in various modifications and adaptations without departing from the spirit and scope of the appended claim. It will be appreciated, for example, that the number and the shape of the weighting threads may be varied without impairing their mechanical damping effect. Similarly, the holding filaments **6** of tinsel may run in diagonal or crossing lines and be made of other than metallic material. Also, the entire system of locking, holding and weighting threads may be rotated through 90° so as to be anchored to the warp **4** rather than the weft **3** of the fabric.

I claim:

A loudspeaker screen comprising a web made from interwoven, orthogonally intersecting sets of first and second threads composed of resin-coated fibers, an array of parallel, spaced-apart cotton threads of substantially greater thickness than said fibers extending over substantially the entire face of said web in the direction of said first fibers, a network of holding threads lighter than said weighting threads overlying the latter while passing back and forth across respective groups of said first fibers, and a set of additional threads anchored to said second fibers along lines parallel to said first fibers and engaging said holding threads in a manner securing both said holding threads and said weighting threads to said web.

References Cited in the file of this patent

UNITED STATES PATENTS

370,246	Cornely	Sept. 20, 1887
520,400	Cattlow	May 22, 1894
1,619,437	Rubel et al.	Mar. 1, 1927
2,189,370	Shiranezawa	Feb. 6, 1940
2,343,614	Harpham	Mar. 7, 1944
2,408,308	Grabowsky	Sept. 24, 1946
2,613,696	MacIntyre	Oct. 14, 1952