

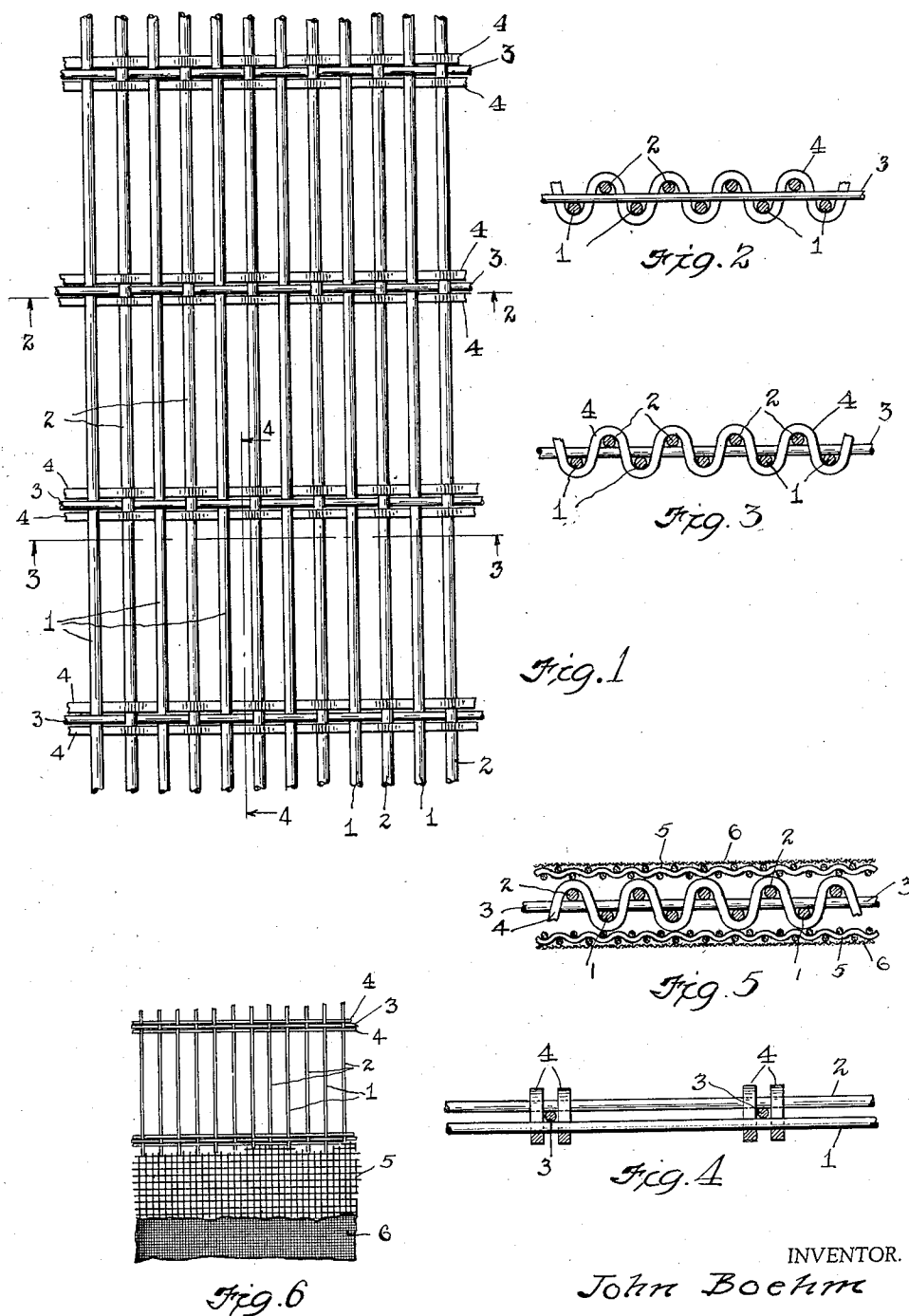
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SCREEN AND METHOD OF MAKING SAME

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SCREEN AND METHOD OF MAKING SAME

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This invention relates as indicated to a screen and the method of making the same and more specifically to the formation of a screen characterized by the arrangement of one set of wires in spaced planes for the purpose hereinafter more fully explained.

5 Metallic fabric or screen cloth, as commonly constructed, consists of interwoven warp and weft wires and for certain uses, it has been customary to flatten the wires where they cross so as to produce a cloth having a substantially level surface. All metallic fabric, as heretofore made, is, therefore, usually no thicker and in a great many instances not even as thick as the sum of the diameters of the warp and weft wires.

10 There are a number of uses to which metallic fabric are admirably adapted but which require that such fabric have an appreciable distance between its opposite faces. One such use is in filters where two close mesh filtering cloths are required to be maintained in spaced relation at a sufficient distance so as to permit the withdrawal of the filtered material from the space between such cloths.

15 As is well known, metallic fabric is most extensively employed as a means for classifying material according to size. For certain types of material having an appreciable percentage of flat or oblong particles, screen cloth, as heretofore manufactured, is frequently incapable of separating out such oblong and/or flat particles for the reason that as the material passes downwardly over the inclined screen surface, the level nature of the screen cloth tends to skid such particles over the screening surface without permitting the short axis thereof to be presented to the interstices of the cloth which is essential inasmuch as material particles are graduated according to the size of their smallest axis.

20 A further difficulty encountered in screening material having a wide range in the size of particles contained therein, is that the larger particles resting directly on the flat screen surface reduce, by their area of contact with such surface, the effective screening area of the cloth.

25 It is among the objects of my invention to provide a metallic fabric which may be employed for all of the above identified uses and others without the enumerated undesirable characteristics but with increased efficiency for each such use. Other objects of my invention will appear as the description proceeds.

In said annexed drawing:

30 Fig. 1 is a fragmentary plan view of a portion of a screen constructed in accordance with the

principles of my invention; Figure 2 is a transverse, sectional view of a portion of the screen illustrated in Figure 1, taken on a plane substantially indicated by the line 2—2; Figure 3 is a transverse, sectional view of a portion of the screen illustrated in Figure 1, taken on a plane substantially indicated by the line 3—3; Figure 4 is a fragmentary sectional view of the screen illustrated in Figure 1, taken on a plane substantially indicated by the line 4—4; Figure 5 is a transverse sectional view through a portion of screen such as that illustrated in Figure 1, showing associated therewith screen cloths of finer mesh supported on opposite sides thereof and maintained in spaced relation thereby; and Figure 6 is a plan view partially broken away of a composite structure, such as has been illustrated in Figure 5.

Referring now more specifically to the drawing and more especially to Figures 1 to 4, both inclusive, the screen comprising my invention consists of longitudinally extending warp wires alternately arranged as two groups 1 and 2, lying in spaced parallel planes. The warp wires illustrated in the screen chosen for purposes of convenience, are straight or substantially straight, so that well-defined flat planes spaced a short distance apart are produced by these warp wires arranged in the manner specified.

At longitudinally spaced intervals, the warp wire groups 1 and 2 are maintained in spaced relation by transversely extending spacer wires 3, which likewise have been illustrated as formed of straight material. The size of the spacer wires 3, of course, determines the space between the opposite faces of the screen and the wire in the drawing, such wires have been illustrated as of substantially the same diameter as the warp and weft wires of the screen, nevertheless, as above indicated, such size may vary, as well as the cross-sectional shape, in order to effect variations in the lateral displacement between the planes defined by the group of warp wires 1 and 2.

The above defined assembly is maintained in close-knit assembled relation by means of weft wires 4 which are woven in and transversely of the warp wires in close proximity to opposite sides of the spacer wires 3, so that such spacer wires will be maintained in definite relation to the warp wires and a rigid, non-sleazy screen produced.

As most clearly illustrated in Figure 4, the weft wires have been illustrated as formed of material having rectangular cross-section, such cross-section assisting in holding warp, weft and spacer

wires in proper assembled relation with a relatively few number of weft wires employed.

It is also to be noted that it is within the contemplation of my invention to provide nicks on some or all of the several wires in the areas where they contact, so that such nicks will co-operate to form an interlocking structure and to add to the rigidity of the finished screen.

The method by which the above identified screen may be constructed or fabricated is to insert one of the crimped weft wires in the warp assembly, next inserting the straight spacer wire and then weaving in the other crimped weft wire forming the band of three transversely extending wires which maintains warp wires in parallel relation and spaced alternately in two planes.

One special use for which the above identified metallic fabric is particularly well adapted is, as indicated at the outset of this description, in the construction of filter units, wherein, as well known to those familiar with the art, screen cloths of relatively fine mesh are supported in spaced relation so that the filtered material passing through such fine mesh cloths may be withdrawn from the space therebetween.

As most clearly illustrated in Figure 5, the screen such as is illustrated in Figure 1 may have secured to its opposite faces a finer mesh metallic fabric 5, preferably woven in the usual fashion, which, in turn, support still finer mesh fabric 6, likewise preferably woven in the usual manner. By the employment of the screen comprising my invention, as the separating and supporting means for the filtering cloths 6 and other supporting cloths 5, the filtering surfaces are maintained in sufficiently spaced relation providing ample room therebetween for the withdrawal of the filtered material.

The screen comprising my invention is likewise admirably adapted for the purpose of screening material containing portions which are oblong in shape and have a relative short minor axis. As these oblong particles flow over the uneven surface of the screen comprising my invention, greater opportunity is afforded for the points of such particles to become engaged by the spaces between the wires than if the screen surface were substantially flat.

The above identified form of screen construc-

tion is likewise admirably adapted for the purpose of classifying materials containing a wide range of particle sizes. As previously indicated, large particles riding on a flat screen surface reduce, by the area of contact therebetween, the effective screening area. When a fabric constructed in accordance with the principles of my invention is employed, the larger particles will ride on the plane defined by one group of warp wires; whereas, the actual classifying space is between adjacent wires, i. e., between the wires of the two groups. Hence, the larger particles, when passing over the screen comprising my invention, do not ride on the classifying surface but instead are maintained above the same, so that the finer material may tumble over the classifying area without interference from the larger particles.

Other forms may be employed embodying the features of my invention instead of the one here explained, change being made in the form or construction, provided the elements stated by any of the following claims or the equivalent of such stated elements be employed, whether produced by my preferred method or by others embodying steps equivalent to those stated in the following claims.

I, therefore, particularly point out and distinctly claim as my invention:

1. In a sifter or separator screen, straight warp wires, narrowly spaced in alternation to form two sets of wires defining two planes; uncrimped weft wires widely spaced between said sets, and together with the wires thereof enclosing long narrow open spaces; and crimped weft wires, interwoven with said warp wires, located one on either side of each of said uncrimped weft wires and adapted to hold said warp wires firmly thereagainst.

2. In a wire screen, uncrimped warp wires, narrowly spaced in alternation to form two sets of wires defining a space of uniform cross-section; straight weft wires, widely spaced between said sets, and together with the wires thereof enclosing long narrow open spaces; and crimped weft wires, interwoven with said warp wires, located one on either side of each of said straight weft wires and adapted to hold said warp wires firmly thereagainst.

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