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METHOD OF MAKING WOVEN WIRE SCREEN

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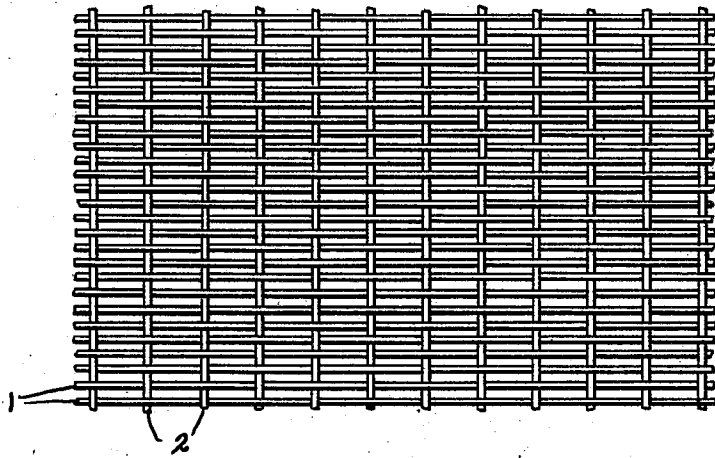


Fig. 1



Fig. 2

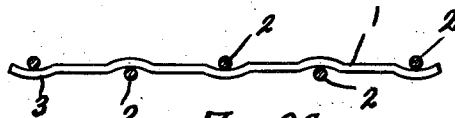


Fig. 3<sup>a</sup>

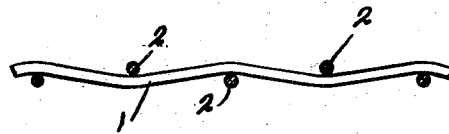


Fig. 3



Fig. 4

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# UNITED STATES PATENT OFFICE

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## METHOD OF MAKING WOVEN WIRE SCREEN

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7 Claims. (Cl. 140—7)

The present invention, relating as indicated to a method of making the same, is particularly directed to a new and improved screen designed to have an increased tensile strength, a greater resistance to abrasion and substantially greater accuracy in action than screens heretofore manufactured. The principal object of the invention is the provision of a simple and economical method of manufacturing a new screen having the characteristics referred to above.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means and steps hereinafter fully described and particularly pointed out in the claims; the annexed drawing and the following description setting forth in detail certain means and one mode of carrying out the invention, such disclosed means and mode illustrating, however, but one of various ways in which the principle of the invention may be used.

In said annexed drawing:—

Fig. 1 is a plan view of one form of our improved screen; Fig. 2 is an end elevation of the same looking at the screen of Fig. 1 from the right side; Fig. 3 is a side elevation of the same; Fig. 3a is a view similar to Fig. 3 showing an alternative form of the warp wires; Fig. 4 is a side elevation showing a bundle of precrimped wires ready for heat treatment.

Our improved screen consists of a series of wires 1 extending lengthwise of the screen and a second series of wires 2 extending transversely of the wires 1 and interwoven therewith. In the manufacture of screens it has been customary in the past to employ harder wires for the lengthwise or warp wires than those employed as crosswise wires. This was necessary because of the greater crimping or bending necessarily given to the crosswise wires in the weaving of the screen, which necessitated the use of a soft pliable wire at this point, while the lengthwise wires, particularly in screens of oblong mesh were bent less sharply, and hence could be made of harder material. The advantage of employing a harder wire for one series was not, however, very great as the life of the screen was determined by the softest wire employed.

To obviate the difficulties referred to above and to make a screen having a materially longer life, and one capable of more accurate separation of the material, we employ soft wire for both the lengthwise and transverse wires. The wire employed should be of the proper physical characteristics and chemical analysis to permit it to be readily crimped, and yet to respond to heat

treatment for the purpose of toughening and hardening the wires after crimping. After selection of a suitable wire for the lengthwise series the wire is crimped by any suitable means to provide the bends or knuckles 3 (see Fig. 3), after which it is cut into suitable lengths for the piece of screen to be woven, and the lengths are assembled into a bundle 4 (see Fig. 4) and heat treated to harden and toughen the wire and to set the wire in the precrimped condition.

The same procedure is then followed in preparing the transverse wires 2. A suitable wire is selected, is subjected to a crimping operation to produce the knuckles or bends 5, the wire is then cut into suitable lengths, assembled and heat treated to toughen and temper the wire and set the wire in the precrimped condition.

The preliminarily formed or precrimped wires are then woven in the usual manner and produce a screen of relatively uniform hardness, toughness and resistance to wear, and one in which the meshes are maintained throughout the life of the screen, giving an extremely accurate screening action on the material.

As illustrated in Fig. 3 the warp wires in certain types of screens need not necessarily be crimped as illustrated in Fig. 3a but with the weft wires pre-crimped in the manner above described, the warp wires of suitably hard and durable material may be interwoven with the precrimped weft wires to produce a screen having the above enumerated characteristics.

It will be noted that while in the form of screen construction illustrated in Fig. 1, the mesh is oblong in shape, nevertheless, the principles comprising our invention may be applied to the construction and manufacture of a screen of square mesh. In fact, the particular size or shape of the mesh, since the same forms no part of this invention, has no particular bearing on the fundamental principles of the method comprising our invention.

As stated in the foregoing description and as illustrated in Fig. 4, one method which may be employed for the purpose of treating warp and/or weft wires before fabrication consists in precrimping suitable lengths of such wire and then tying the same in bundles and placing them in a suitable furnace for heat treating. Nevertheless, there are numerous other methods which may be employed for heat treating the wire before weaving and it is within the contemplation of our invention to carry on either or both of the precrimping and treating steps as a continuous operation. This treatment in a continuous manner

of the wires without cutting the same into suitable lengths as is illustrated in Fig. 4 may be accomplished by passing the same through a suitable furnace or the like in order to effect the proper treatment of the wire.

Our improved screen not only possesses longer life than those heretofore employed, but is also materially more accurate in separation.

Other forms may be employed instead of the one here explained embodying the features of our invention, 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 our preferred method or by others embodying steps equivalent to those stated in the following claims.

We therefore particularly point out and distinctly claim as our invention:—

1. In a method of making a woven wire screen, the steps which consist in pre-crimping a series of warp wires, subjecting the same to heat treatment and then weaving the same with a series of weft wires into a screen.

2. In a method of making a woven wire screen, the steps which consist in pre-crimping a series of weft wires, subjecting the same to heat treatment and then weaving the same with a series of warp wires into a screen.

3. In a method of making a woven wire screen, the steps which consist in pre-crimping a series of weft wires, subjecting the same to heat treatment, and then weaving the same into a screen.

4. In a method of making a woven wire screen, the steps which consist in pre-crimping a series of weft wires, subjecting the same to heat treatment to fix and harden the said wires in such crimped condition, and then weaving the same into a screen.

5. In a method of making woven wire screen, the steps which consist in pre-crimping a series of weft wires, heat treating the warp and weft wires, and then weaving the same into a screen.

6. In a method of making woven wire screen, the steps which consists in pre-crimping a series of warp and weft wires, heat treating the same, and then weaving the same into a screen.

7. In a method of making woven wire screen, the steps which consist in pre-crimping a series of wires, subjecting such wires to a heat treatment as the same are moved continuously through a furnace, and then weaving such wires with a set arranged transversely thereto to form a screen.

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