July 17, 1956 H. HENKE 2,755,047

COMPACT WIRE FABRIC

Filed March 11, 1953

FIG. 2

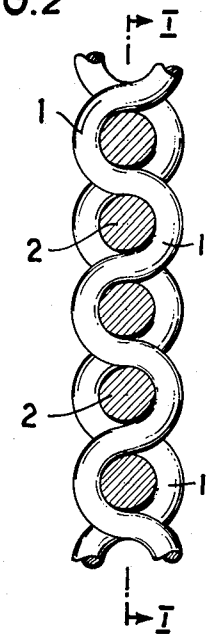
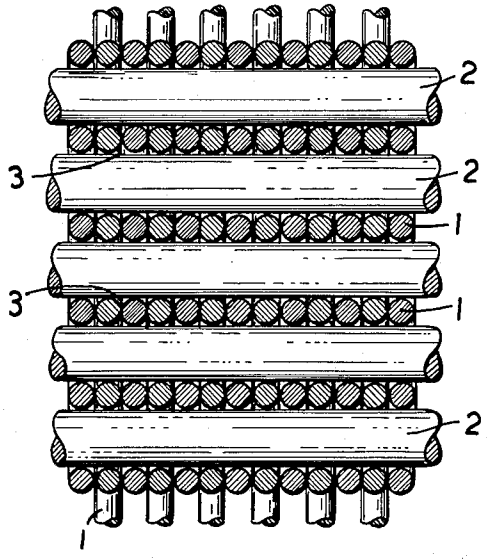


FIG. 1



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COMPACT WIRE FABRIC

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1 Claim. (Cl. 245—8)

The invention relates to a wire fabric, particularly to the production of an extremely compact fabric.

Extremely compact filter fabrics have until now been produced in such a manner that the transversely extending weft wires have been woven closely and without any distance from one another. As the transversal wires have to bend around the warp wires, that is the longitudinal wires, those longitudinal wires may be arranged only in such a distance from one another which amounts to a multiple of their thickness. Moreover the longitudinal wires are not allowed to exceed a certain small diameter as otherwise the weft wires are not able to stand the elongation arising in weaving and break. If as a compensation the weft wires would be made thicker, either the warp wire would break or no compact fabric could be obtained, as the weft wires could no more be woven closely side by side because in this case the warp wires instead of the weft wires would have to bend around the latter and would hinder the reciprocal contact of the weft wires.

The disadvantage of the compact wire fabrics produced until now consists in the too small number and the small thickness of the longitudinal wires. For this reason the usual compact fabrics are considerably less durable in longitudinal direction than in transverse direction. The longitudinal wires break when tensioning the fabric and its compactness is diminished when any stress is put upon the fabric because thereby the longitudinal wires are elongated and the transversal wires are displaced.

This invention has for its object a wire fabric in which these disadvantages are eliminated. The essential feature of the fabric according to the invention consists therein that the longitudinal wires lie closely side by side in reciprocal contact and are bent around the transversal wires. That means that no more the transversely extending weft wires, but the longitudinally extending warp wires are woven closely side by side, whereby the warp wires are bent one after another alternatively around the weft wires. In this production of a compact fabric the longitudinal wires may be bent in any degree of steepness around the transversal wires without the danger of a break arising. This results from the fact that the longitudinal wires are able to derive from the warp beam the wire length necessary for the bends effected one after another.

The development of the compact wire fabric according to the invention makes it possible that any degree of thickness of the transversal wire may be chosen. The thickness of the transversal wires may exceed that of the longitudinal wires. The diameter of the transversal wires may for example amount to a multiple of the diameter of the longitudinal wires. Adequately to such a strengthening of the transversal wires a fabric is obtained which is able to show in both directions of the fabric sufficient tearing strength.

The development according to the invention further makes it possible to arrange the transversal wires at any distance from one another, particularly at such small distance that the distance of the transversal wires from

one another corresponds to the diameter of the bent around longitudinal wires. In this case a completely closed fabric is obtained whose compactness can no more be increased. Such kind of fabric combines the highest possible density of filtration with great mechanical strength.

In the drawing is illustrated one embodiment of the invention.

Fig. 1 shows a section through the fabric of the instant invention when taken along lines I—I of Fig. 2; and

Fig. 2 is another sectional view of the fabric of the instant invention.

Contrary to the usual manner of production of compact wire fabrics, the longitudinally extending warp wires 1 are bent around the transversally extending weft wires 2 and the longitudinal wires 1 are able to contact one another immediately. Thereby the thickness of the weft wires may be considerably greater than that of the longitudinal wires.

In Figs. 1 and 2 is illustrated a fabric having theoretically the highest possible density. In this fabric not only the longitudinal wires 1 lie side by side contacting one another immediately, but also the transversal wires 2 are arranged closely side by side in such a manner that the distance between two weft wires corresponds to the diameter of the interwoven longitudinal wires. The longitudinal wires are twisted around the weft wires over an angle of 180°. In this case the surface of the fabric is closed with the exception of the geometrically calculable openings 3 between the cross sections of the closely lying longitudinal wires and the weft wires which are separating them. According to the chosen thickness of the longitudinal and weft wires, the finest density of filtration may be obtained together with great mechanical strength of the fabric. An illustrative example of a very fine filtering fabric may be indicated by preparing a filter consisting of very fine warp wires whose diameter does not exceed 0.04 mm., with the diameter of the weft wires being, for example, double multiple of the warp wire as figuratively illustrated in the drawings.

The extremely compact fabric according to the invention may be used for most different purposes. The compact fabric is particularly well suited as a sieve for paper-making machinery and as a filter fabric generally.

I claim:

A closely woven compact wire filter fabric and the like consisting of a plurality of slightly and uniformly separated transverse weft wires, each of said weft wires comprising an undeformed, single and integral strand of wire of uniform diameter and single strands of longitudinally extending warp wires arranged in alternate side by side contiguous relationship woven one up and one down over and under succeeding weft wire strands in a wrapped around relationship, the diameter of each of said single stranded weft wires also being a multiple of the diameter of a warp wire strand, and said wrapped portions of the warp strands also being so located intermediate adjacent weft wire strands that the said wrapped warp portions are disposed substantially perpendicular to the normal plane of the fabric, with the adjacent weft strands in turn being separated from each other only by a distance substantially equal to the diameter of a warp strand.

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